BS Sijwali • Indu Sijwali

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A NEW APPROACH to
REASONING
VERBAL, NON-VERBAL & ANALYTICAL

Useful for

Management (CAT, XAT, MAT, CMAT, IIFT, SNAP & other),Bank (PO & Clerk)
SSC (CGL, 10+2, Steno, FCI, CPO, Multitasking), LIC (AAO & ADO)
CLAT, RRB, UPSC and Other State PSC Exams

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BS Sijwali • Indu Sijwali
Edited by
Diwakar Sharma

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Inspiring Minds.Inspiring Lives
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PREFACE

In any general, competitive or entrance examination, the section Reasoning and General Intelligence is equally weighted section in any question paper.

Reasoning basically tests candidates thinking power and mind applicability skills. Importance of reasoning is increasingly moving centre stage in today's competitive examinations. The questions that are asked in different examinations are not easy to solve and one cannot solve these problems without having prior knowledge and better practice. But if a candidate knows the basic concept behind the question, then he/she can solve it in no time.

This Book 'A New Approach to Reasoning is' the most appropriate and the best reference text book on reasoning as it caters to the needs of students who aspire to prepare and develop skills in Verbal, Non-Verbal and Analytical Reasoning for various competitive exams *viz* Management entrances (CAT, XAT, MAT, CMAT, IIFT & SNAP, etc.), SSC (10+2, CGL, CPO etc.), Bank (PO & Clerk), Railways, UPSC and other State PSCs entrance exams.

Above all, it can be said that the book at hand prove to be a real gem if studied with dedication and sincerity. We are sure that this book will add a new dimension to the preparation for every competitive examination and prove to be very helpful to all candidates.

However , we have put our best efforts in preparing this book, but if any error or whatsoever has been skipped out, we have welcomed your suggestions. A part from all those who helped in the compilation of this book a special note of thanks goes to Ms Mona Yadav and Ms Akanksha Jain, without their support the book could not have come to its shape. Ravi Shankar and Shravan Pandey have given their expertise in the layout of the book .

The contribution of Mr Amogh Goyal, Ms Swati Vishnoi and Mr Sachin Prjapati for this book is also very special and worthy of great applause.

Reader's recommendation will be highly treasured.

Authors

BS Sijwali,
Indu Sijwali &
Diwakar Sharma

FEATURES OF THE BOOK

- ✓ The whole book is divided into three sections viz. Verbal, Non-Verbal and Analytical Reasoning.
- ✓ Each chapter begins with a brief introduction about chapter and covers all possible types that are covered under it.
- ✓ Each type has its specific theory with supported examples and also has its separate exercise with detailed solutions.
- ✓ At the end of the chapter, there is a Master Exercise which covers questions based on all types and questions asked in previous years' examinations. Each question has its accurate and detailed answer.

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VERBAL

1

Analogy

Analogy basically means "resemblance of one object to another in certain aspects." The aim of analogy is to test the candidate's ability to discover the relationship between the question pair and then to find the required pair of words which is most similar to that relationship.

Different types of questions covered in this chapter are as follows

- Analogous Pair Completion
- Direct or Simple Analogy
- Similar Word Selection
- Multiple Word Analogy
- Number Based Analogy
- Analogous Pair Selection
- Double Analogy
- Analogy Detection
- Letter Based Analogy

In this chapter, a question consists of words related to each other based on some logic and it is required to find a word/pair of words analogous to those given in the question

To solve these questions, following two simple steps are to be followed

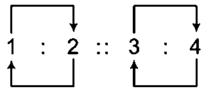
Step I The candidate is required to identify the relationship between the pair of numbers/letters/words given.

Step II Find out the other pair such that the relationship between the third and the fourth numbers/letters/words is similar to the relationship that exists between the first and second numbers/letters/words.

Now, it is clear that analogy is established, when the two pairs on both the sides of the sign (::) bear the same relationship.

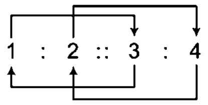
This analogical relationship can be established in two ways as follows

1. Basic Relation Basic relation is as follows



Here, the relation of 3 to 4 or 4 to 3 is the same as the relation of 1 to 2 or 2 to 1.

2. Advanced Relation Advanced relation is as follows



Here, the relation of 2 to 4 or 4 to 2 is the same as the relation of 1 to 3 or 3 to 1. To have more clearty about analogical relationship, let us consider the example given below

Doctor : Hospital : : Teacher : School
(i) (ii)

Now, just think over (i) and (ii). What relationship can you establish between these two?
If you go for a deeper analysis, you will find the following

(i) Doctor : Hospital

A 'doctor' works in a 'hospital'. It means 'hospital' is a working place for a 'doctor'.

Hence, Doctor : Hospital has worker and working place relationship.

(ii) Teacher : School

A 'teacher' works in a 'school'. It means 'school' is the working place for a 'teacher'.

Hence, Teacher : School has worker and working place relationship.

Clearly, it is observed that in both the cases (i) and (ii), the relationship is similar, i.e., worker and working place relationship. Therefore, we can say that these two are analogical pairs.

Sometimes, these analogical relationships can be established as given below

Doctor : Teacher : : Hospital : School

Here, 'Doctor' is related to 'Hospital' in the same way as 'Teacher' is related to 'School'

(i) [Doctor : Hospital] and (ii) [Teacher : School] are actually different from each other but they are logically similar.

These analogous relationships can be of several types depending upon the kind of relationship between the two objects of a pair.

Some most common types of analogous relationships are as follows

Synonymous Relationship

This type of relationship is established between the two words, when they convey the same meaning.

e.g., Abandon : Leave

'Abandon' means almost the same as 'Leave'. Hence, 'Abandon' is a synonym of 'Leave'.

Some more examples are given below

Dwelling : Abode
Ban : Prohibition
Idea : Notion
Endless : Eternal
Kind : Benevolent
Synthetic : Artificial
Substitute : Replace
Fallacy : Illusion
Assign : Allot
Fierce : Violent
Brim : Edge
Abduct : Kidnap
Vacant : Empty
House : Home
Contact : Meet
Escape : Abscond
Enormous : Huge
Encumber : Burden
Dissipate : Squander
Flaw : Defect
Dearth : Scarcity
Mend : Repair
Sedate : Calm

Antonymous Relationship

This type of relationship is established between the two words, when they are opposite in meaning.

e.g., Kind : Cruel

'Kind' means the opposite of 'Cruel'. Hence, 'Kind' and 'Cruel' have antonymous relationship.

Some more examples are given below

Meet : Avoid
Scarcity : Abundance
Deep : Shallow
Cordial : Hostile
Chaos : Peace
Gradual : Abrupt
Final : Initial
Notice : Ignore
Harsh : Gentle
Lethargy : Alertness
Expand : Condense
Never : Always
Weak : Robust
Advance : Retreat
Slim : Bulky
Affirm : Deny
Stale : Fresh
Create : Destroy
Rejoice : Mourn
Blunt : Sharp
Kindle : Extinguish

Individual and Group Relationship

When one word of the pair is the collective group of another word of the pair, then it is called individual and group relationship.

e.g., Cattle : Herd

A group of 'Cattle' is called 'Herd'.

Some more examples are given below

Sheep : Flock
Fish : Shoal
Termites : Colony
Riders : Cavalcade
Grapes : Bunch
Bees : Swarm
Robbers : Gang
Ministers : Council
Rioters : Mob
Musicians : Band
Chicken : Brood
Goods : Stock
Soldiers : Army
Pupils : Class
Singer : Chorus
Sailors : Crew
Players : Team
Flowers : Bouquet
Pilgrims : Caravan
Countries : League
People : Crowd

Intensity Relationship

When one word of the pair is of higher intensity than the other word of the pair, then it is called intensity relationship.

e.g., Quarrel : War

'War' is of higher intensity than 'Quarrel'.

Some more examples are given below

Sink : Drown
Kindle : Burn
Refuse : Deny
Wish : Desire
Moist : Drench
Famous : Renowned
Speak : Shout
Anger : Rage
Unhappy : Sad
Error : Blunder
Crime : Sin

Worker and Product Relationship

When one word of the pair represents the working professionals and the other word of the pair represents their final product, then it is called worker and product relationship.

e.g., Author : Book

An author writes a book. It means 'Book' is the product of 'Author'.

Some more examples are given below

Poet : Poem
Producer : Film
Choreographer : Ballet
Dramatist : Play
Farmer : Crop
Carpenter : Furniture
Mason : Wall
Cobbler : Shoes
Editor : Newspaper
Tailor : Clothes
Chef : Food
Sculptor : Bust
Goldsmith : Ornaments
Architect : Design

Worker and Tool Relationship

When one word of the pair represents the working professionals and the other word of the pair is the tool used for their working, then it is called worker and tool relationship.

e.g., Chef : Knife

'Knife' is a tool used by 'Chef'.

Some more examples are given below

Surgeon : Scalpel
Labourer : Spade
Blacksmith : Anvil
Farmer : Plough
Warrior : Sword
Mason : Plumb line
Doctor : Stethoscope
Tailor : Needle
Author : Pen
Soldier : Gun
Sculptor : Chisel
Woodcutter : Axe
Carpenter : Saw
Gardener : Harrow

Product and Raw Material Relationship

When one word of the pair represents the raw material used for the formation of the product given in the other word of the pair, then it is called product and raw material relationship.

e.g., Furniture : Wood

'Furniture' is made of 'Wood'.

Some more examples are given below

Jaggery : Sugarcane
Paper : Pulp
Shoes : Leather
Jewellery : Gold
Cloth : Fibre
Omelette : Egg
Sack : Jute
Fabric : Yarn
Metal : Ore
Book : Paper
Road : Asphalt
Rubber : Latex
Prism : Glass
Furniture : Wood
Linen : Flax
Wall : Brick
Pullover : Wool
Oil : Seed

Part and Whole Relationship

When one word of the pair represents a single part of the whole object given in other word of the pair, then it is called part and whole relationship.

e.g., Computer : Hard Disk

'Hard Disk' is a part of 'Computer'.

Some more examples are given below

Fan : Blade
Cart : Wheel
Circle : Arc
House : Room
Clock : Needle
Aeroplane : Cockpit
Bicycle : Pedal
Pen : Nib
Class : Student
Car : Steering
Book : Chapter

Worker and Working Place Relationship

When one word of the pair represents the working professional and the other word of the pair their working place, then it is called worker and working place relationship.

e.g., Clerk : Office

A 'Clerk' works in a 'Office'.

Some more examples are given below

Warrior	:	Battle field	**Teacher**	:	School
Doctor	:	Hospital	**Beautician**	:	Parlour
Gambler	:	Casino	**Engineer**	:	Site
Worker	:	Factory	**Painter**	:	Gallery
Mechanic	:	Garage	**Farmer**	:	Field
Chef	:	Kitchen	**Actor**	:	Stage
Scientist	:	Laboratory	**Astronomer**	:	Observatory
Waiter	:	Restaurant	**Servant**	:	House
Umpire	:	Pitch	**Artist**	:	Theatre
Lawyer	:	Court			

Tool and Action Relationship

When one word of the pair represents the tool and the other word of the pair gives its function/action, then it is called tool and action relationship.

e.g., Knife : Cut

A 'Knife' is used for 'Cutting'.

Some more examples are given below

Gun	:	Shoot	**Spoon**	:	Feed
Axe	:	Grind	**Shovel**	:	Scoop
Microscope	:	Magnify	**Spade**	:	Dig
Pen	:	Write	**Auger**	:	Bore
Needle	:	Sew	**Binocular**	:	View
Tongs	:	Hold	**Spanner**	:	Grip
Loudspeaker	:	Amplify	**Shield**	:	Guard
Oar	:	Row	**Chisel**	:	Carve

Pair Relationship

When the two words form a genuine pair, then it is called a pair relationship.

e.g., Lock : Key

'Lock' and 'Key' make pair.

Some more examples are given below

Question	:	Answer
Pencil	:	Eraser
Shoes	:	Socks
Horse	:	Carriage
Chair	:	Table
Door	:	Window
Saree	:	Blouse
Cup	:	Saucer
Shirt	:	Trousers

Study and Topic Relationship

When one word of the pair gives the branch of study and the other word gives the topic of study of that branch, then it is called study and topic relationship.

e.g., Pathology : Diseases

'Pathology' is the study of 'Diseases'.

Some more examples are given below

Botany	:	Plants	**Virology**	:	Viruses
Oology	:	Eggs	**Concology**	:	Shells
Archaeology	:	Artifacts	**Zoology**	:	Animals
Onomatology	:	Names	**Palaeography**	:	Writings
Astrology	:	Planets	**Craniology**	:	Skull
Ornithology	:	Birds	**Anthropology**	:	Man
Entomology	:	Insects	**Seismology**	:	Earthquakes
Palaeontology	:	Fossils	**Cardiology**	:	Heart
Pedology	:	Soil	**Physiology**	:	Body

Animal and Movement Relationship

When one word of the pair gives the animal name and other word of the pair represents its movement, then it is called animal and movement relationship.

e.g., Donkey : Trot

'Trot' is the name given to the movement of the 'Donkey'.

Some more examples are given below

Rabbit	:	Leap	**Mouse**	:	Scamper
Horse	:	Gallop	**Lion**	:	Prowl
Lamb	:	Frisk	**Bear**	:	Lumber
Cock	:	Strut	**Elephant**	:	Amble
Bird	:	Fly	**Eagle**	:	Swoop
Owl	:	Flit	**Duck**	:	Waddle

Animal/Thing and Sound Relationship

When one word of the pair represents the sound produced by the animal/thing given in the other word of the pair, then it is called animal/thing and sound relationship.

e.g., Elephant : Trumpet

Trumpet' is the sound produced by 'elephant'.

Some more examples are given below

Lion	:	Roar	**Donkey**	:	Bray
Rain	:	Patter	**Sparrow**	:	Chirp
Dog	:	Bark	**Goat**	:	Bleat
Hen	:	Cackle	**Drum**	:	Beat
Bells	:	Chime	**Bee**	:	Hum
Horse	:	Neigh	**Mice**	:	Squeak
Cat	:	Mew	**Camel**	:	Grunt
Thunder	:	Roar	**Owl**	:	Hoot
Snake	:	Hiss	**Duck**	:	Quack
Leaves	:	Rustle	**Frog**	:	Croak

Individual/Thing and Class Relationship

When one word of the pair represents the class of the other word, then it is called individual/thing and class relationship.

e.g., Lizard : Reptile

'Lizard' belongs to the class of 'Reptiles'.

Some more examples are given below

Frog	:	Amphibian	**Pen**	:	Stationery
Rat	:	Rodent	**Man**	:	Mammal
Snake	:	Reptile	**Cup**	:	Crockery
Shirt	:	Garment	**Curtain**	:	Drapery
Whale	:	Mammal	**Ostrich**	:	Bird
Chair	:	Furniture	**Butterfly**	:	Insect

Individual and Dwelling Place Relationship

When one word of the pair represents the dwelling place of the individuals given in the other word of the pair, then it is called individual and dwelling place relationship.

e.g., Mouse : Hole

A 'Mouse' lives in a 'Hole'.

Some more examples are given below

Nun	:	Convent	**Peasant**	:	Cottage
Soldier	:	Barracks	**Bee**	:	Hive
Bird	:	Nest	**Eagle**	:	Eyrie
Lion	:	Den	**Spider**	:	Web
Lunatic	:	Asylum	**Pig**	:	Sty
Eskimo	:	Igloo	**Knight**	:	Mansion
Hare	:	Burrow	**Gypsy**	:	Caravan
Owl	:	Barn	**King**	:	Palace
Horse	:	Stable	**Cow**	:	Pen/Byre
Monk	:	Monastery	**Convict**	:	Prison

Animal/Things and Keeping Place Relationship

When one word of the pair is the keeping place of the animal/thing given in other word of the pair, then it is called animal/thing and keeping place relationship.

e.g., Grains : Granary

'Grains' are kept in 'Granary'.

Some more examples are given below

Medicine	:	Dispensary	**Bees**	:	Apiary
Birds	:	Aviary	**Animals**	:	Zoo
Fish	:	Aquarium	**Wine**	:	Cellar
Patient	:	Hospital	**Aeroplane**	:	Hangar
Clothes	:	Wardrobe	**Guns**	:	Armoury
Car	:	Garage			

Games and Playing Place Relationship

When one word of the pair represents the place for playing the game given in the other word of the pair, then it is called games and playing place relationship.

e.g., Cricket : Pitch

'Cricket' is played on the 'Pitch'.

Some more examples are given below

Race	:	Track	**Tennis**	:	Court
Exercise	:	Gymnasium	**Hockey**	:	Ground
Skating	:	Rink	**Boxing**	:	Ring
Badminton	:	Court	**Wrestling**	:	Arena
Athletics	:	Stadium			

Male and Female Relationship

When two words of the pair represents male and female gender of each other, then it is called male and female relationship.

e.g., Man : Woman

'Man' is the male while 'Woman' is the female.

Some more examples are given below

Dog	:	Bitch	**Horse**	:	Mare
Bull	:	Cow	**Bullock**	:	Heifer
Cock	:	Hen	**Stag**	:	Doe
Lion	:	Lioness	**Wizard**	:	Witch
Monk	:	Nun	**Earl**	:	Countess
Gander	:	Goose	**Bachelor**	:	Spinster
Drone	:	Bee	**Colt**	:	Filly
Nephew	:	Niece	**Son**	:	Daughter
Brother	:	Sister	**Master**	:	Mistress
Fox	:	Vixen	**Drake**	:	Duck

Animal and Young One Relationship

When one word of the pair represents the name given to the young ones of the animals given in other word of the pair, then it is called animal and young one relationship.

e.g., Frog : Tadpole

'Tadpole' is the young one of 'Frog'.

Some more examples are given below

Cat	:	Kitten	**Dog**	:	Puppy
Deer	:	Fawn	**Duck**	:	Duckling
Swan	:	Cygnet	**Man**	:	Child
Stag	:	Fawn	**Insect**	:	Larva
Hen	:	Chick	**Lion**	:	Cub
Tiger	:	Cub	**Sheep**	:	Lamb
Bear	:	Cub	**Horse**	:	Colt/Filly/Foal
Butterfly	:	Caterpillar	**Cockroach**	:	Nymph

Quantity and Unit Relationship

When one word of the pair gives the unit used for the representation of the quantity given in other word of the pair, then it is called quantity and unit relationship.

e.g., Force : Newton

'Newton' is the unit of 'Force'.

Some more examples are given below

Length	:	Metre	**Mass**	:	Kilogram
Time	:	Seconds	**Temperature**	:	Degree
Volume	:	Litre	**Current**	:	Ampere
Resistance	:	Ohm	**Angle**	:	Radian
Work	:	Joule	**Energy**	:	Joule
Power	:	Watt	**Potential**	:	Volt
Pressure	:	Pascal	**Area**	:	Hectare

Instrument and Measurement Relationship

When one word of the pair represents the instrument used for the measurement of other word, then it is called instrument and measurement relationship.

e.g., Scale : Length

'Scale' is an instrument used to measure 'Length'.

Some more examples are given below

Balance	:	Mass
Thermometer	:	Temperature
Odometer	:	Speed
Anemometer	:	Wind
Screw Gauge	:	Thickness
Ammeter	:	Current
Seismograph	:	Earthquakes
Taseometer	:	Strains
Sphygmomanometer	:	Blood Pressure

Country and Capital Relationship

When one word of the pair gives the capital of the country given in other word of the pair, then it is called country and capital relationship.

e.g., India : Delhi

'Delhi' is the capital of 'India'.

Some more examples are given below

Japan	:	Tokyo	**UK**	:	London
USA	:	Washington DC	**Iraq**	:	Baghdad
Egypt	:	Cairo	**Pakistan**	:	Islamabad
Spain	:	Madrid	**Canada**	:	Ottawa
Greece	:	Athens	**Italy**	:	Rome
Nepal	:	Kathmandu	**China**	:	Beijing
Iran	:	Tehran	**Russia**	:	Moscow
Kenya	:	Nairobi	**Denmark**	:	Copenhagen
Afghanistan	:	Kabul	**Thailand**	:	Bangkok
Norway	:	Oslo	**Cuba**	:	Havana

State and Capital Relationship

When one word of the pair gives the capital of the state given in other word of the pair, then it is called state and capital relationship.

e.g., Bihar : Patna

'Patna' is the capital of 'Bihar'.

Some more examples are given below

UP	:	Lucknow
Asom	:	Dispur
Rajasthan	:	Jaipur
Sikkim	:	Gangtok
Gujarat	:	Gandhi Nagar
Kerala	:	Thriuvananthapuram
Nagaland	:	Kohima
Meghalaya	:	Shillong
Andhra Pradesh	:	Hyderabad
Himachal Pradesh	:	Shimla
Tamil Nadu	:	Chennai
Karnataka	:	Bengaluru
Odisha	:	Bhubaneshwar

Country and Currency Relationship

When one word of the pair gives the currency of the country given in other word of the pair, then it is called country and currency relationship.

e.g., India : Rupee

'Rupee' is the currency of 'India'.

Some more examples are given below

USA	:	Dollar	**Australia**	:	Dollar
Japan	:	Yen	**UK**	:	Pound
Russia	:	Ruble	**Sweden**	:	Krona
Spain	:	Peseta	**Netherlands**	:	Guilder
Argentina	:	Peso	**Greece**	:	Euro
Myanmar	:	Kyat	**Iran**	:	Rial
Iraq	:	Dinar	**Thailand**	:	Baht
UAE	:	Dirham	**Kuwait**	:	Dinar
South Korea	:	Won			

Country and Continent Relationship

When one word of the pair represents a continent and the other word gives the name of a country which is a part of the given continent, then it is called country and continent relationship.

e.g., India : Asia

'India' is the part of 'Asia'.

Some more examples are given below

France	:	Europe	**Canada**	:	North America
Pakistan	:	Asia	**Ghana**	:	Africa
Brazil	:	South America	**Zimbabwe**	:	Africa

Country and Parliament Relationship

When one word of the pair gives the name of the parliament of the country given in other word of the pair, then it is called country and parliament relationship.

e.g., Japan : Diet

'Diet' is the name of parliament of 'Japan'.

Some more examples are given below

Australia	Federal Parliament
India	Parliament
Bhutan	Tshogdu
Canada	House of commous and Assembly senate
Denmark	Folketing
Iran	Majlis
Israel	Knesset
Mongolia	Khural
Norway	Stortling
Poland	Sejm
Spain	Cortes Generales
Russia	Duma
Malaysia	Dewan Rakyat and Dewan Negara
Maldives	Majlis
Sweden	Riksdag
USA	Congress
Afghanistan	Shora

Country and National Emblem Relationship

When one word of the pair represents the national emblem of the country given in the other word of the pair, then it is called country and national emblem relationship.

e.g., Australia : Kangaroo

'Kangaroo' is the national emblem of 'Australia'.

Some more examples are given below

Norway	Lion	**Pakistan**	Crescent
France	Lily	**Germany**	Corn Flower
Sri Lanka	Sword and Lion	**India**	Lion Capital
Japan	Chrysanthemum	**Ireland**	Shamrock
USA	Golden Rod	**Denmark**	Beach
Spain	Eagle	**UK**	Rose
Italy	White Lily	**Canada**	White Lily

Country and Official Book Relationship

When one word of the pair gives the name of the official book of the country given in other word of the pair, then it is called country and official book relationship.

e.g., Blue Book : Britain

'Blue Book' is the official report of the 'British Government'.

Some more examples are given below

Green Book	Italy	**White Book**	China
Yellow Book	France	**Gray Book**	Japan/Belgium
Orange Book	Netherlands		

Sign and Symbol Relationship

When one word of the pair represents the sign of the symbol given in the other word of the pair, then it is called sign and symbol relationship.

e.g., Black Flag : Protest

'Black Flag' is the sign of 'Protest'.

Some more examples are given below

Dove	Peace	**Wheel**	Progress
White Flag	Truce	**Red**	Danger
Red Flag	Danger/Revolution	**Green Light**	Clear
Red Light	Stop	**Star**	Rank
Red Triangle	Family Planning	**Black**	Sorrow
Red Cross	Hospital	**Swastika**	Fortune

Countries and National Monuments Relationship

When one word of the pair gives the national monument of the country given in the other word of the pair, then it is called country and national monument relationship.

e.g., Emperical Palace : Japan

'Emperical Palace' is the national monument of 'Japan'.

Some more examples are given below

Eiffel Tower	France	**Kermlin**	Moscow
Pyramid	Egypt	**Opera House**	Australia
Tajmahal	India	**Kinder Disk**	Denmark

- City and monuments/important places relationship also exists in the same manner.

Countries and Newspaper Relationship

When one word of the pair gives the name of the newspaper of the country given in the other word of the pair, then it is called country and newspaper relationship.

e.g., India : Times of India

'Times of India' is an 'Indian' newspaper.

Some more examples are given below

Pakistan	Dawn	**USA**	Daily News
Britain	Daily Mirror	**China**	People's Daily
India	The Hindu		

Countries and News Agencies Relationship

When one word of the pair gives the name of the news agency of the country given in the other word of the pair then it is called country and news agency relationship.

e.g., India : PTI

'PTI' is an 'Indian' news agency.

Some more examples are given below

Iran	Irna
Britain	Reuters
China	Xin-hua
Afghanistan	Khaama
Indonesia	Antara

Country and National Game Relationship

When one word of the pair gives the name of the national game of the country given in the other word of the pair, then it is called country and national game relationship.

e.g., India : Hockey

'Hockey' is the national game of 'India'.

Some more examples are given below

Britain	:	Cricket	**Japan**	:	Judo
Pakistan	:	Hockey	**USA**	:	Baseball
Spain	:	Bull Fighting	**China**	:	Table Tennis

Country and National Flower Relationship

When one word of the pair represents the national flower of the country given in the other word of the pair, then it is called country and national flower relationship.

e.g., India : Lotus

'Lotus' is the national flower of 'India'.

Some more examples are given below

UK	:	Rose	**France**	:	Iris
Germany	:	Knapweed	**Ireland**	:	Shamrock
Australia	:	Golden Wattle	**Canada**	:	Maple Leaf
Hongkong	:	Orchid	**Portugal**	:	Lavender

Country and National Animal Relationship

When one word of the pair represents the national animal of the country given in other word of the pair, then it is called country and national animal relationship.

e.g., India : Tiger

'Tiger' is the national animal of 'India'.

Some more examples are given below

Australia	:	Kangaroo	**Japan**	:	Ibis
UK	:	Robin Redbrest	**Canada**	:	Weaver

Country and River Relationship

When one word of the pair represents the river which flows through the country given in the other word of the pair, then it is called country and river relationship.

e.g., India : Ganga

'Ganga' is a river that flows in 'India'.

Some more examples are given below

China	:	Hwang Ho
Italy	:	Tiber
Britain	:	Thames
Austria	:	Danube
India	:	Gomti

Country and Intelligence Agencies Relationship

When one word of the pair gives the name of the intelligence agency of the country given in other word of the pair, then it is called country and intelligence agency relationship.

e.g., India : CBI

'CBI' is the intelligence agency of 'India'.

Some more examples are given below

Israel	:	Mossad	**Egypt**	:	Mukhabarat
Russia	:	KGB	**Pakistan**	:	ISI
Australia	:	ASIS	**USA**	:	CIA

Country and Tribes Relationship

When one word of the pair gives the name of tribe living in the country given in other word of the pair, then it is called country and tribes relationship.

e.g., India : Bheel

'Bheel' is a tribe of 'India'.

Some more examples are given below

Canada	:	Eskimo	**New Zealand**	:	Maori
USA	:	Red Indians	**Malaysia**	:	Semang

Relationship Based on City's Location on the River Banks

When one word of the pair gives the name of the city situated on the bank of the river given in other word of the pair, then it is called relationship based on city's location on the river banks.

e.g., London : Thames

'London' is located on the bank of river 'Thames'.

Some more examples are given below

Lucknow	:	Gomti	**Paris**	:	Seine
Rome	:	Tiber	**Delhi**	:	Yamuna
New York	:	Hudson			

Country and Ports Relationship

When one word of the pair gives the name of port located in the country given in other word of the pair, then it is called country and port relationship.

e.g., India : Mumbai

'Mumbai' is a port located in 'India'.

Some more examples are given below

Australia	:	Sydney
Bangladesh	:	Chittagong
China	:	Shanghai
Japan	:	Yokohama

State and High Court Relationship

When one word of the pair gives the name of the city, where the high court of the state given in the other word of the pair is located, then it is called state and high court relationship.

e.g., Bihar : Patna

High Court of 'Bihar' is located in 'Patna'.

Some more examples are given below

UP : Allahabad
Uttarakhand : Nainital
Rajasthan : Jodhpur
Madhya Pradesh : Jabalpur

Inventors and Inventions Relationship

When one word of the pair gives the name of the inventor of the invention given in the other word of the pair, then it is called inventor and invention relationship.

e.g., Television : John Baird

'John Baird' is the inventor of 'Television'.

Some more examples are given below

Telephone : Graham Bell
Telescope : Galilio
Bicycle : Mac Millian
Fountain Pen : Waterman

Religion and Worship Place Relationship

When one word of the pair gives the worship place of the religion given in other word of the pair, then it is called religion and worship place relationship.

e.g., Hindu : Temple

'Temple' is the worship place for 'Hindus'.

Some more examples are given below

Sikhs : Gurudwara
Christians : Church
Muslims : Mosque
Jews : Synagogue

Religion and Religious Book Relationship

When one word of the pair gives the name of religious book of the religion given in other word of the pair, then it is called religion and religious book relationship.

e.g., Hindu : Ramayana

'Ramayana' is the religious book of 'Hindus'.

Some more examples are given below

Muslims : Quran
Christians : Bible
Jews : Torah
Parsi : Gathas of Zarathushtra

City and Founder Relationship

When one word of the pair gives the name of the founder of the city given in other word of the pair, then it is called city and founder relationship.

e.g., Srinagar : Ashoka

'Ashoka' was the founder of 'Srinagar'.

Some more examples are given below

Jaipur : Savai Man Singh
Agra : Sikander Lodi
Amritsar : Guru Ramdas
Firozabad : Firoz Shah Tughlaq

Dynasty and Founder Relationship

When one word of the pair gives the name of the founder of the dynasty given in other word of the pair, then it is called dynasty and founder relationship.

e.g., Mughal Dynasty : Babar

'Mughal Dynasty' was founded by 'Babar'.

Some more examples are given below

Gupta Dynasty : Chandraga gupt I
Sur Dynasty : Shershah
Maurya Dynasty : Chandragupta Maurya
Slave Dynasty : Qutub-ud-din Aibak

Sports and Players Relationship

When one word of the pair gives the name of the player associated with the sport given in other word of the pair, then it is called sport player relationship.

e.g., Cricket : Virat Kohli

'Virat Kohli' plays the game of 'Cricket'.

Some more examples are given below

Tennis : Sania Mirza
Badminton : Sania Nehwal
Cricket : Mithali Raj
Hockey : Sandeep Singh

Sports and Sports Terms Relationship

When one word of the pair gives the sports term which is associated with the sport given in other word of the pair, then it is called sports and sports term relationship.

e.g., LBW : Cricket

'LBW' is the term used in the game of 'Cricket'.

Some more examples are given below

Smash : Badminton/Tennis
Penalty Corner : Hockey
Diamond : Baseball
Deuce : Tennis

Persons and Specialised Field Relationship

When two words of the pair give the name of the person and the field with which that person is associated, then it is called person and specialised field relationship.

e.g., Amitabh Bachchan : Films

'Amitabh Bachchan' is a film actor and hence he is associated with 'Films'.

Some more examples are given below

Uma Sharma : Dance
Rajdeep Sardesai : Media
Anil Ambani : Business
Sachin Tendulkar : Cricket
Sushma Swaraj : Politics

Famous Personalities and Country Relationship

When one word of the pair gives the name of a famous personality associated with the country given in the other word of the pair, then it is called famous personality and country relationship.

e.g., Anna Hazare : India

'Anna Hazare' is a famous social activist of 'India'.

Some more examples are given below

Imran Khan : Pakistan
Chetan Bhagat : India
Bill Clinton : USA
Maradona : Argentina

Sports and Cups/Trophies Relationship

When one word of the pair gives the name of the cup/trophy associated with the sport given in the other word of the pair, then it is called sports and cups/trophis relationship.

e.g., Golf : Ryder Cup

'Ryder Cup' is an award or cup which is given to the winner in 'Golf'.

Some more examples are given below

Cricket : Duleep Trophy
Football : Durand Cup
Hockey : Dhyan Chand Trophy
Badminton : Uber Cup

Awards and Field Relationship

When one word of the pair gives the name of the award associated with the field given in other word of the pair, then it is called award and field relationship.

e.g., Booker Award : Literature

In the given relationship, first is award and the second is field *i.e.*, 'Booker Award' is given in the field of 'Literature'.

Some more examples are given below

Gramy Award : Music
Oscar Award : Film
Dada Sahab Phalke Award : Film
Global Award : Environment

Country and National Sign Relationship

When one word of the pair represents the national sign of the country given in other word of the pair, then it is called country and national sign relationship.

e.g., India : Ashoka Chakra

'Ashoka Chakra' is the national sign of 'India'.

Some more examples are given below

Spain : Eagle
France : Lily
Iran : Rose
Australia : Golden Wattle

Country and Place Relationship

When one word of the pair gives the name of a place situated in the country given in other word of the pair, then it is called country and place relationship.

e.g., UK : Buckingham Palace

'Buckingham Palace' is a place situated in United Kingdom (UK).

Some more examples are given below

USA : White House
Australia : Opera House
Italy : Saint Peter's Church
Russia : Red Square

City and Industries Relationship

When one word of the pair gives the name of industry for which the country given in other word of the pair is famous, then it is called city and industry relationship.

e.g., Detroit : Automobiles

'Detroit' is famous city for 'Automobiles' Industry.

Some more examples are given below

Hollywood : Film making
Manchester : Cotton Clothes
Johannes Burg : Gold Mining
Pitts Burgh : Steel

India and National Symbol Relationship

When one word of the pair gives the name of national item of India given in other word of the pair, then it is called India and national symbol relationship.

e.g., Sport : Hockey

'Hockey' is the national 'Sport of India'.

Some more examples are given below

River : Ganga
Sweet : Jalebi
Flower : Lotus
Animal : Tiger
Bird : Peacock

Monuments and Place Relationship

When one word of the pair gives the name of the place, where the monument given in other word of the pair is situated, then it is called monument and place relationship.

e.g., Taj Mahal : Agra

'Taj Mahal' is a monument of India which is situated in Agra.

Some more examples are given below

Hawa Mahal : Jaipur
Jahaz Mahal : Mehrauli
Man Mahal : Gwalior
Victoria Mahal : Kolkata

Flag and Meaning Relationship

When one word of the pair gives the type of flag and the other word of the pair gives what the flag symbolises, then it is called flag and meaning relationship.

e.g., Yellow Flag : Ambulance (Ambulance carrying a person suffering from infection)

Here, first is the symbol used to denote the second.

Some more examples are given below

Black Flag : Against
White Flag : Surrender
Red Flag : Revolution
Brown Flag : National Sorrow

Students must keep in mind that basis of word relationships are taken from

- History
- Art and Culture
- Politics
- Sports
- Economics
- Awards
- Science and Technology
- Social Facts
- Geography
- Current Affairs

Problems based on analogy are asked in different formats in various competitive exams where the candidate is required to either find out the similar analogous pair or to complete the given analogous pair. Sometimes, the candidate is required to find out the type of analogy shared by the given words. Based on this, we have classified analogy based into following types.

Type 1 Analogous Pair Completion

In such type of analogical problems, two pairs of words are given and the words in the first pair are related to each other in a particular way. The candidate is required to find out the relationship between the first two words and pick the word from the given options which bears exactly the same relationship to the third word, as the first two bear. Sometimes, fourth word is given and third word has to be selected from the given alternatives.

The solved examples given below will give you clear cut idea about such type of problems

Directions (Example Nos. 1-10) Find out the relationship between the first two words and choose the missing word from the given alternatives. which bears the same relationship to the third/ fourth word, as the first two bear.

***Ex* 1** Apple : Fruit : : Potato : ?
(a) Flower (b) Fruit
(c) Sweet (d) Root

Sol. (*d*) 'Apple' is a 'Fruit' and similarly 'Potato' is a modified 'Root'.

***Ex* 2** Dearth : Scarcity : : Substitute : ?
(a) Rumor (b) Assume
(c) Replace (d) Destroy

Sol. (c) 'Dearth' is the synonym of 'Scarcity' and similarly 'Substitute' is the synonym of 'Replace'.

***Ex* 3** Chaos : Peace : : Lanky : ?
(a) Short (b) Lengthy
(c) Great (d) Fine

Sol. (*a*) 'Chaos' is the antonym of 'Peace' and similarly 'Lanky' is the antonym of 'Short'.

***Ex* 4** Thunder : Rain : : ? : Night
(a) Dus (b) Dark
(c) Evening (d) Dusk

Sol. (*d*) 'Rain' is followed by 'Thunder' and similarly 'Night' follows Dusk.

***Ex* 5** Page : Book : : Leaf : ?
(a) Forest (b) Root (c) Red (d) Tree

Sol. (*d*) 'Page' is the part of 'Book' and similarly 'Leaf' is the part of 'Tree'.

***Ex* 6** Eye : See : : Leg : ?
(a) Write (b) Breath (c) Walk (d) Hear

Sol. (c) 'Eye' is the part of body which is used to 'See' and in the same way 'Leg' is the part of body which is used to 'Walk'.

***Ex* 7** Tadpole : ? : : Caterpillar : Butterfly **[SSC (Steno) 2013]**
(a) Crow (b) Goose
(c) Fish (d) Frog

Sol. (*d*) 'Caterpillar' is the youngone of 'Butterfly' Similarly, Tadpole is the youngone of 'Frog.'

***Ex* 8** Plant : Seed :: ? : Bud
(a) Leaf (b) Twig
(c) Flower (d) Fruit

Sol. (c) As, grown form of 'Seed' is 'Plant', similarly grown form of 'Bud' is Flower.

Ex **9** Cobbler : Leather :: Carpenter : ? **[SSC (10+2) 2013]**

(a) Furniture
(b) Wood
(c) Hammer
(d) Chair

Sol. (*b*) As, 'Cobbler' uses 'Leather' to make shoes, etc., similarly 'Carpenter' uses 'wood' to make Furniture.

Ex **10** Video : Cassette : : Computer : ? **[IBPS (Clerk) 2013]**

(a) Reels
(b) Recordings
(c) Files
(d) Floppy
(e) CPU

Sol. (*d*) 'Recordings' of the second are visualised on the first.

Practice Corner **1.1**

Build your Confidence...

Directions (Q. Nos. 1-57) In each of the following questions, there is a certain relationship between two given words on one side of (::) and one word is given on another side (::) while another word is to be found from the given alternatives, having the same relation with this word as the words of the given pair bear. Choose the correct alternative.

1. King : Throne :: Judge : ? **[SSC (FCI) 2012]**
(a) Lawyer (b) Bench (c) Court (d) Trial

2. Lion : Roar : : Ass : ?
(a) Bark (b) Trumpet (c) Howl (d) Bray

3. Lamb : Frisk : : Mouse : ?
(a) Trot (b) Scamper (c) Gallop (d) Flit

4. Circle: Arc : : Square : ? **[SSC (Multitasking) 2013]**
(a) Line (b) Triangle (c) Sphere (d) Rectangle

5. Brinjal : Vegetable : : Orange : ? **[UP B.Ed. 2011]**
(a) Fruit (b) Stem (c) Leaf (d) Root

6. Contamination : Food : : Infection : ?
(a) Germs (b) Disease (c) Body (d) Microbes

7. Pleasure : Sorrow :: Right : ? **[SSC (Constable) 2011]**
(a) Wrong (b) Wonderful (c) Happy (d) Sure

8. Aluminium : Bauxite : : Iron : ?
(a) Pyrite (b) Magnesite (c) Pynolosite (d) Haematite

9. Truthfulness : Liar : : Loyalty : ?
(a) Worker (b) Traitor (c) Diligent (d) Faithful

10. House : Door :: Compound : ? **[SSC (Multitasking)2013]**
(a) Gate (b) Fence
(c) Foundation (d) Wall

11. Hongkong : China :: Vatican : ? **[SSC (Multitasking) 2013]**
(a) France (b) Mexico (c) Canada (d) Rome

12. Giant : Dwarf : : Genius : ?
(a) Wicked (b) Gentle (c) Idiot (d) Tiny

13. Aryabhatta : Mathematician : : Varahamihira : ?
(a) Physician (b) Astronomer
(c) Scientist (d) Architect

14. Peat : Lignite : : Bituminous : ?
(a) Granite (b) Basalt (c) Anthracite (d) Coke

15. Cougar : South America : : Okapi :? **[SSC (Steno) 2013]**
(a) India (b) Central Africa
(c) North America (d) Pakistan

16. Love : Friend : : Hate : ?
(a) Hatred (b) Brother
(c) Enemy (d) Companion

17. Sheep : Mutton : : Deer ? **[SSC (CGL) April 2014]**
(a) Veal (b) Meat (c) Flesh (d) Venison

18. Tea : Leaves : : Coffee : ?
(a) Plant (b) Leaves (c) Seeds (d) Stimulant

19. Deep : Shallow : : Sharp : ?
(a) Knife (b) Blade (c) Blunt (d) Ocean

20. Horse : Stable : : Man : ? **[UP B.Ed. 2011]**
(a) Woman (b) Den (c) Clothes (d) House

21. Mason : Wall : : Carpenter : ? **[UP B.Ed. 2009]**
(a) Glass (b) Chair (c) Pen (d) Book

22. Knife : Cut : : ? : Guard **[Hotel Mgmt 2008]**
(a) Dig (b) Shield (c) Oar (d) Bore

23. Cobbler : Leather : : Tailor : ? **[SSC (CGL) April 2014]**
(a) Thread (b) Cloth (c) Shirt (d) Draper

24. College : Dean : : Museum : ?
(a) Superviser (b) Custodian
(c) Warden (d) Curator

25. Moth : Insect : : Mouse : ?
(a) Cat (b) Mole

(c) Rodent (d) Rat

26. Magazine : Editor :: Drama : ? **[SSC (Multitasking) 2014]**
(a) Director (b) Player (c) Manager (d) Actor

27. Arc : Circle : : Line : ?
(a) Point (b) Rectangle (c) Ellipse (d) Sphere

28. French : France : : Dutch : ?
(a) Holland (b) Norway (c) Fiji (d) Sweden

29. Dress : Tailor : : ? : Carpenter **[SSC (Multitasking) 2014]**
(a) Wood (b) Furniture (c) Leather (d) Cloth

30. Letter : Telegram : : Train : ?
(a) Aeroplane (b) Horse (c) Messenger (d) Telephone

31. Prime facie : On the first view :: In part delicto : ? **[CLAT 2014]**
(a) Both parties equally at fault (b) While litigation is pending
(c) Aremedy for all disease (d) Beyond powers

32. Nightingale : Warble : : Frog : ? **[IBPS (Clerk) 2013]**
(a) Yelp (b) Croak (c) Cackle (d) Squeak
(e) None of these

33. Monotony : Variety : : Crudeness : ?
(a) Refinement (b) Raw (c) Sobriety (d) Simplicity

34. Burglar : House : : Pirate : ?
(a) Sea (b) Ship (c) Sailor (d) Crew

35. Hill : Mountain : : Stream : ?
(a) River (b) Canal (c) Glacier (d) Avalanche

36. Pyramid : Egypt : : Eiffel Tower : ?
(a) Spain (b) France (c) Canada (d) Japan

37. Foot : ? :: Hand : Wrist **[SSC (10+2) 2013]**
(a) Length (b) Shoe (c) Ankle (d) Leg

38. Smell : Flower :: Taste : ? **[SSC (10+2) 2013]**
(a) Water (b) Salt (c) Food (d) Sweet

39. Annihilation : Fire : : Cataclysm : ?
(a) Earthquake (b) Steam (c) Emergency (d) Disaster

40. Smoke : Pollution :: War : ?
(a) Peace (b) Victory
(c) Treaty (d) Destruction

41. Wax : Candle : : ? : Paper
(a) Tree (b) Bamboo
(c) Pulp (d) Wood

42. Buffalo : Milk : : Hen : ?
(a) Egg (b) Meat (c) Cock (d) Bird

43. Motorcycle : Battery : : Life : ?
(a) Comet (b) Star (c) Sun (d) Moon

44. Abduct : Kidnap : : Solicit : ? **[SSC (CGL) 2009]**
(a) Request (b) Ban
(c) Squander (d) Allot

45. Needle : Watch : : Blade : ? **[UP B.Ed. 2008]**
(a) Computer (b) Fan (c) Book (d) Car

46. Cricket : Pitch : : Wrestling : ? **[SBI (Clerk) 2007]**
(a) Rink (b) Wrestler (c) Ground (d) Arena
(e) None of these

47. Eye : Wink : : Heart : ? **[CLAT 2014]**
(a) Throb (b) Move (c) Pump (d) Respirate

48. Pituitary : Brain : : Thymus : ?
(a) Larynx (b) Spinal Cord (c) Throat (d) Chest

49. Scientist : Laboratory : : Actor : ? **[SSC (CGL) 2010]**
(a) Casino (b) Gallery (c) Stage (d) Site

50. USA : Congress : : Iran : ?
(a) Althing (b) Storting (c) Majlis (d) Cortes

51. Ocean : Water : : Glacier : ? **[CLAT 2014]**
(a) Cooling (b) Cave (c) Ice (d) Mountain

52. Calendar : Dates : : Dictionary : ?
(a) Vocabulary (b) Language (c) Words (d) Book

53. Visitor : Invitation : : Witness : ?
(a) Subpoena (b) Permission (c) Assent (d) Document

54. Poet : Poem : : Tailor : ? **[SSC (Multitasking) 2009]**
(a) Book (b) Author (c) Crop (d) Clothes

55. Mash : Horse : : Mast : ?
(a) Cow (b) Monkey (c) Lion (d) Pig

56. Penology : Punishment : : Seismology : ?
(a) Law (b) Liver
(c) Earthquakes (d) Medicines

57. Delusion : Hallucination :: Chagrin : ? **[CLAT 2014]**
(a) Illusion (b) Ordered
(c) Cogent (d) Annoyance

Response & Interpretations **(1.1)**

1. (*b*) As 'King' is related to 'Judge', in the same way 'Throne' is related to 'Bench'.

2. (*d*) 'Roar' is the sound produced by 'Lion' , similarly 'Bray' is the sound produced by 'Ass'.

3. (*b*) 'Frisk' is the name given to the movement of 'Lamb', similarly 'Scamper' is the name given to the movement of 'Mouse'.

4. (*a*) As 'Arc' is a part of 'Circle', in the same way 'Line' is a part of 'Square'.

5. (*a*) 'Brinjal' is a 'Vegetable', in the same way 'Orange' is a 'Fruit'.

6. (*c*) 'Food' gets affected by 'Contamination', in the same way 'Body' gets affected by 'Infection.'

7. (*a*) 'Pleasure' is opposite of 'Sorrow', in the same way 'Right' is opposite of 'Wrong'.

8. (*d*) Latter represents the ore of the former.

9. (*b*) Former cannot be expected from the latter.

10. (*a*) 'Doors' are entry to a 'House' or we can get into the house through door. In the same way, gates are entry to a Compound or we can get into a compound through 'Gate'.

11. (*d*) As, 'Hongkong' is in 'China', in the same way 'Vatican' is situated in Rome.

12. (*c*) 'Dwarf' is the antonym of 'Giant', in the same way 'Genious' is the antonym of 'Idiot'.

13. (*a*) 'Aryabhatta' was the famous 'Mathematician' of the ancient period, in the same way 'Varahamihira' was a famous 'Physician' of ancient period.

14. (*c*) All represent the different forms of coal.

15. (*b*) As, 'Cougar' (a type of lion) is found in 'South America', similarly, Okapi is found in Central Africa

16. (*c*) Former is received from the latter.

17. (*d*) As 'Mutton' is the meat of 'Sheep', similarly 'Venison' is the meat of 'Deer'

18. (*c*) Latter is the original form of the former.

19. (*c*) 'Deep' is opposite to 'Shallow,' in the same way 'Sharp' is opposite to 'Blunt'.

20. (*d*) A 'Horse' lives in 'Stable', similarly a 'Man' lives in a 'House'.

21. (*b*) 'Mason' builds a 'Wall', in the same way a 'Carpenter' makes a 'Chair'.

22. (*b*) A 'Knife' is used to 'Cut', in the same way a 'Shield' is used to 'Guard'.

23. (*b*) As 'Cobbler' use leather to mend 'shoes', similarly 'Tailor' uses clothes to make 'Dresses'.

24. (*d*) Second is the head of first.

25. (*c*) Second denotes the class to which first belongs.

26. (*a*) The role of 'Editor' is publishing a 'Magazine', in the same way the role of 'Director' is playing a 'Drama'.

27. (*b*) Latter is formed by extending the former.

28. (*a*) Former is the language used by the latter country.

29. (*b*) As Tailor makes Dress, similarly Carpenter makes Furniture.

30. (*a*) Latter denotes the modified way with respect to efficiency of the former.

31. (*a*) Prima facie, is a latin expression and the meaning of this is 'On the first view'. In the same way the meaning of in part delicto is 'Both parties equally at fault'.

32. (*b*) As sound of 'Nightingale' is 'Warble' similarly sound of 'Frog' is 'Croak'.

33. (*a*) 'Monotony' is the antonym of 'Variety' and similarly, 'Crudeness' is the antonym of 'Refinement'.

34. (*b*) Second is robbed by first.

35. (*a*) Second is the larger form of the first.

36. (*b*) 'Pyramid' is situated in 'Egypt' and 'Eiffel Tower' is situated in 'France'.

37. (*c*) As 'Wrist' is joined with the' Hand', similarly Ankle is joined with the foot.

38. (*c*) 'Smell' is found in 'flower' and 'Taste' is found in 'food'.

39. (*a*) As, 'Fire' can lead to 'Annihilation', similarly 'Earthquake' can lead to 'Cataclysm'.

40. (*d*) Second is result of the first.

41. (*c*) Former is used to manufacture latter.

42. (*a*) Latter is produced by the former.

43. (*c*) Latter is the source of energy for the former.

44. (*a*) Both, 'Abduct' and 'Kidnap' are synonyms. In the same way, 'Solicit' and 'Request' are synonyms.

45. (*b*) First is the part of second.

46. (*d*) Second is the playing place of first.

47. (*a*) Latter represents the movements of former.

48. (*d*) 'Pituitary' is the gland present in the 'Brain' and 'Thymus' is the gland present in the 'Chest'.

49. (*c*) Second is the working place of the first.

50. (*c*) Latter is the Parliament of the country represented by former.

51. (*c*) As 'Ocean' related to 'Water', in the same way 'Glacier' is related to 'Rice'.

52. (*c*) Former contains the latter.

53. (*a*) 'Visitor' requires 'Invitation' to appear and likewise 'Witness' requires 'Subpoena' to appear.

54. (*d*) A 'Poet' writes 'Poem' and in the same way a 'Tailor' stiches 'Clothes'.

55. (*d*) Former is the food for latter.

56. (*c*) Former is the study of latter.

57. (*d*) The words are synonyms of each other. So, chagrin's synonym is annoyance.

Type 2 Analogous Pair Selection

In such type of problems, a pair of words is given, followed by four pairs of words as options. The candidate is required to pick the pair in which the words bear the same relationship to each other as the words of the given pair do.

Examples given below will give a better idea about such type of problems

Directions (Example Nos. 11-20) Find out the pair in which the words bear the same relationship to each other as similar to the words of the given pair bear.

***Ex* 11** Austria : Vienna

(a) Pakistan : Lahore (b) Egypt : Cairo
(c) USA : Orlando (d) Germany : London

Sol. (*b*) 'Viena' is the capital of 'Austria' and in the same way 'Cairo' is the capital of 'Egypt'.

***Ex* 12** Dog : Bark

(a) Monkey : Roar (b) Owl : Chirp
(c) Horse : Neigh (d) Sparrow : Trumpet

Sol. (c) 'Bark' is the sound produced by a 'Dog' and similarly, 'Neigh' is the sound produced by a 'Horse'.

***Ex* 13** Pig : Sty **[SSC (CGL) 2011]**

(a) Donkey : Bray
(b) Hen : Chick
(c) Owl : Barn
(d) Bird : Asylum

Sol. (c) A 'Pig' lives in a 'Sty' and in the same way an 'Owl' lives in a 'Barn'.

***Ex* 14** Horse : Mare

(a) Fox : Vixen
(b) Bullock : Doe
(c) Monk : Monkey
(d) Bee : Hen

Sol. (*a*) 'Mare' is the female 'Horse' and similarly, 'Vixen' is the female 'Fox'.

***Ex* 15** Fish : Shoal **[SSC (CPO) 2010]**

(a) Audience : Theater
(b) Shark : School
(c) Elephant : Flock
(d) Whale : Herd

Sol. (c) A group of 'Fish' is called 'Shoal'. Similarly, a group of elephants is called 'Flock'.

***Ex* 16** Dubious : Certain

(a) Hot : Angry (b) Cold : Warm
(c) Long : Elongated (d) Short : Dawar fish

Sol. (*b*) 'Dubious' is the antonym of 'Certain' and similarly, 'Cold' is the antonym of 'Warm'.

***Ex* 17** Indolence : Beaver

(a) Elegence : Peacock (b) Ferocity : Lamb
(c) Passivity : Cow (d) Joviality : Hyena

Sol. (*a*) 'Beaver' is known for its 'Indolence' and similarly 'Peacock' is known for its beauty or 'Elegence'.

***Ex* 18** Horse : Equine **[MAT 2013]**

(a) Lion : Carnivorous (c) Cat : Feline
(c) Table : Furniture (d) Dog : Vulpine

Sol. (*b*) Here, Equine is related to or affecting horses or other members of horse family. Similarly, Feline is relating to or affecting cats or other members of cat family.

***Ex* 19** Introvert : Extrovert **[SSC (10+2) 2013]**

(a) Angle : Tangent
(b) Extreme : Interim
(c) Against : Favour
(d) Action : Law

Sol. (c) Introvert is antonym of Extrovert. Similarly, Against is antonym of Favour.

***Ex* 20** India : Tricolour **[CLAT 2012]**

(a) China : Sickle and Hammer
(b) UK : Red Cross
(c) USA : Stars and Stripes
(d) None of the above

Sol. (c) Given relation (India : Tricolour) is the relation of country and corresponding national flag.

Practice Corner 1.2

Build your Confidence...

Directions (Q. Nos. 1-52) The following questions consist of two words each, that have a certain relationship with each other, followed by four lettered pairs of words. Select the letter pair that has the same relationship as the original pair of words.

1. Pen : Write
(a) Knife : Plate (b) Chair : Table
(c) Oar : Row (d) Worker : Factory

2. Book : Chapter
(a) Pen : Pencil (b) Computer : Calculator
(c) Mobile : Landline (d) House : Room

3. Chair : Wood :: ? **[SSC (10+2) 2013]**
(a) Book : Print (b) Mirror : Glass
(c) Plate : Food (d) Purse : Money

4. Agra : Taj Mahal **[UP B.Ed. 2011]**
(a) Delhi : Hawa Mahal (b) Patna : Red Fort
(c) Gaya : Golghar (d) Amritsar : Golden Temple

5. Animal : Zoology
(a) Body : Physiology (b) Disease : Bacteriology
(c) Poems : Anthology (d) Man : Philanthropy

6. Spider : Web **[RRB (TC/CC) 2006]**
(a) Ink : Pen (b) Cock : Hen
(c) Teacher : Student (d) Poet : Poetry

7. Medicine : Pills
(a) Spices : Food (b) Knowledge : Books
(c) Watch : Time (d) Radio : Sound

8. Horse : Hoof **[SSC (DEO) 2012]**
(a) Man : Foot (b) Dog : Black
(c) Paise : Rupee (d) Pen : Pencil

9. Tagore : Geetanjali
(a) Madam Curie : Radium (b) Shakespeare : Skylark
(c) Dickens : Oliver Twist (d) Nobel : Dynamite

10. Bud : Flower : : ? **[IBPS (Clerk) 2013]**
(a) Clay : Mud (b) Sapling : Tree
(c) River : Glacier (d) Bird : Tree
(e) Paper : Book

11. Ideas : Brain
(a) Literature : Author (b) Clouds : Ocean
(c) Money : Bank (d) Planets : Earth

12. Frankness : Blunt
(a) Rise : Awake (b) Weep : Laugh
(c) Sickness : Death (d) Rest : Activity

13. Love : Hate **[UP B.Ed. 2011]**
(a) Go : Do (b) Near : Where
(c) Up : Down (d) Come : Soon

14. Mendacity : Honesty **[IB (ACIO) 2013]**
(a) Truth : Beauty (b) Sportsmanship : Fortitude
(c) Courageous : Craven (d) Turpitude : Depravity

15. Run : Race
(a) Enjoy : Journey (b) Lecture : Study
(c) Study : Book (d) Party : Dance

16. Capricious : Reliability
(a) Extemporaneous : Predictability
(b) Unreliable : Inhuman
(c) Tenacious : Practicality
(d) Arbitrary : Whimsical

17. Water : Oxygen
(a) Helium : Nitrogen (b) Salt : Sodium
(c) Tree : Plant (d) Food : Hunger

18. Geeta : Quran
(a) Orange : Mango (b) Temple : Worship
(c) Good : Man (d) Army : Defence

19. Sin : Crime **[SSC (FCI) 2012]**
(a) Man : Animal (b) Home : Court
(c) Morality : Legality (d) Jury : Priest

20. Milk : Cream
(a) College : Students (b) Sugar : Sweet
(c) Clay : Pottery (d) Fruit : Glucose

21. Loathe : Coercion
(a) Detest : Caressing (b) Irritate : Caressing
(c) Irate : Antagonism (d) Reluctant : Persuasion

22. Straws : Nest
(a) Water : Stream (b) Animals : Zoo
(c) Threads : Cloth (d) Wood : Paper

23. Umpire : Game
(a) Prodigy : Wonder (b) Chef : Banquet
(c) Legislator : Election (d) Moderator : Debate

24. Fly : Walk
(a) Sit : Sleep (b) Roast : Bake
(c) Sky : Earth (d) Pilot : Captain

25. Scale : Fish

(a) Lady : Dress
(b) Tree : Leaves
(c) Bird : Feather
(d) Skin : Man

26. Book : Author **[CLAT 2013]**

(a) Rain : Flood
(b) Light : Switch
(c) Symphony : Composer
(d) Song : Music

27. Identity : Anonymity

(a) Flaw : Perfection
(b) Careless : Mistake
(c) Truth : Lie
(d) Fear : Joy

28. Suggestion : Order

(a) Advise : Suggest
(b) Smile : Laugh
(c) Plan : Implement
(d) Anger : Shout

29. Interview : Service

(a) Travel : Bus
(b) Examination : Degree
(c) Ticket : Travel
(d) Light : Darkness

30. Bihu : Asom **[UP B.Ed. 2011]**

(a) Garba : Bengal
(b) Gidd : Gujarat
(c) Yakshgan : Bihar
(d) Bhangra : : Punjab

31. Minute : Hour

(a) Drop : Ocean
(b) People : Crowd
(c) Cup : Tea set
(d) Paisa : Rupee

32. Statute : Law **[CLAT 2014]**

(a) Proviso : Clause
(b) Chapter : Exercise
(c) University : School
(d) Section : Illustration

33. Round : Earth

(a) Thin : Paper
(b) Height : Mountain
(c) Transparent : Glass
(d) Cube : Dice

34. Plaintiff : Defendant **[MAT 2006]**

(a) Judge : Jury
(b) Court : Law
(c) Attorney : Lawyer
(d) Injured : Accused

35. Buddhists : Pagoda **[CLAT 2014]**

(a) Parsis : Temple
(b) Christians : Cross
(c) Jains : Sun Temple
(d) Jews : Synagogue

36. Dearth : Surplus

(a) Simple : Complicated
(b) True : Unbelievable
(c) Touch : Repulsion
(d) Dream : Fantasy

37. Disobedience : Punishment

(a) Teenager : Dynamic
(b) Prayer : Salvation
(c) Bravery : Appreciation
(d) Patience : Listening

38. Lotus Temple : Delhi

(a) Jama Masjid : Patna
(b) Hawa Mahal : Kolkata
(c) Char Minar : Hyderabad
(d) Amarnath Cave : Ahmedabad

39. Comets : Meteors

(a) Books : Knowledge
(b) Hawk : Crow
(c) Stars : Fortune
(d) Reptiles : Crawl

40. Music : Notes

(a) Dance : Music
(b) Mathematics : Numbers
(c) Language : Communication
(d) Nations : UN

41. Colour : Eyes

(a) Vision : Spectacles
(b) Print : Newspaper
(c) Medicine : Ailment
(d) Fragrance : Nose

42. Launcher : Missiles

(a) Gun : Revolver
(b) Boat : Anchor
(c) Catapult : Stone
(d) Engine : Train

43. Sorrow : Misery **[CLAT 2013]**

(a) Love : Obsession
(b) Amity : Harmony
(c) Happiness : Joy
(d) Enemy : Hatred

44. Drama: Audience **[CLAT 2013]**

(a) Brawl: Vagabonds
(d) Game : Spectators
(c) Art: Critic
(d) Movie : Actors

45. Ring : Engagement

(a) Handshake : Treaty
(b) Kick : Beat
(c) Anger : Insult
(d) Bangle : Wrist

46. Hair : Shampoo

(a) Face : Powder
(b) Button : Shirt
(c) Detergent : Soap
(d) Teeth : Toothpaste

47. King : Palace **[UP B.Ed. 2010]**

(a) Convict : House
(b) Nun : Temple
(c) Hare : Hole
(d) Lion : Den

48. Emollient : Soothe **[IRMA 2006]**

(a) Dynamo : Generate
(b) Elevation : Level
(c) Hurricane : Track
(d) Precipitation : Fall

49. Disabuse : Error

(a) Persevere : Dereliction
(b) Discredit : Reputation
(c) Rehebilitate : Addiction
(d) Belittle : Imperfection

50. Inspiration : Poetry

(a) Music : Notes
(b) Dirt : Disease
(c) Brush : Painting
(d) Mind : Thought

51. Hockey : Game

(a) King : Rule
(b) Constitution : Assembly
(c) Book : Read
(d) Latin : Language

52. Letter : Word

(a) Homework : School
(b) Club : People
(c) Product : Factory
(d) Page : Book

Response & Interpretations **(1.2)**

1. (*c*) 'Pen' is used to write and similarly, 'Oar' is used to 'Row'.

2. (*d*) 'Chapter' is a part of 'Book' and similarly, 'Room' is a part of 'House'.

3. (*b*) As Chair is made of Wood, similarly, Mirror is made of Glass.

4. (*d*) 'Taj Mahal' is located in 'Agra' and in the same way 'Golden Temple' is located in 'Amritsar'.

5. (*a*) 'Zoology' is the branch of science dealing with the study of 'Animals' and similarly, 'Physiology' is the branch of science dealing with the study of 'Body'.

6. (*d*) As a 'Spider' makes 'Web', similarly a 'Poet' makes 'Poetry'.

7. (*b*) 'Medicine' is given in the form of 'Pills' and 'Knowledge' is given in the form of 'Books'.

8. (*a*) 'Hoof ' is related to 'Horse', in the same way, 'Foot' is related to 'Man'.

9. (*c*) 'Geetanjali' is written by 'Tagore' and 'Oliver Twist' is written by 'Dickens'.

10. (*b*) As 'Bud' grows and becomes a 'Flower'; similarly, 'Sapling' grows and becomes a 'Tree'.

11. (*c*) 'Ideas' are stored in 'Brain' and 'Money' is stored in 'Bank'.

12. (*a*) 'Frankness' and 'Blunt' are synonyms and so are 'Rise' and 'Awake'.

13. (*c*) Antonymous relationship of words.

14. (*c*) They both are antonyms of each other 'Mendacity' means untruthfulness, which is opposite of honesty. In the same way 'Craven' means coward which is antonym of 'Courageous'.

15. (*c*) As, 'Race' is related to 'Run', similarly a 'Book' is related to 'Study'.

16. (*c*) A person who is 'Capricious' loses 'Reliability'. In the same way, if a person is 'Tenacious', he loses 'Practicality'.

17. (*b*) 'Water' contains 'Oxygen' in it and 'Salt' contains 'Sodium' in it.

18. (*a*) 'Geeta' and 'Quran' belong to the same class, *i.e.,* religious books and 'Orange' and 'Mango,' also belong to the same class, *i.e.,* fruits.

19. (*c*) 'Sin' is related to 'Crime', in the same way, 'Morality' is related to 'Legality'.

20. (*c*) 'Cream' is made from 'Milk'. Likewise, 'Pottery' is made from 'Clay'.

21. (*c*) 'Loathe' and 'Coercion' are related. In the same way 'Irate' and 'Antagonism' are related.

22. (*c*) 'Nest' is made up of 'Straws' and 'Cloth' is made up of 'Threads'.

23. (*c*) As, 'Umpire' is in a 'Game', in the same way 'Legislator' is in an 'Election'.

24. (*c*) 'Sky' and 'Earth' are related to one another, in the same manner as 'Fly' and 'Walk'.

25. (*d*) 'Scale' is the outer layer of the body of a 'Fish'. Therefore, 'Skin' relates to 'Man' in the same way as 'Scale' is to 'Fish'.

26. (*c*) Book is written by Author, in the same way Symphony is composed by Composer.

27. (*a*) Second is the state of lack of first.

28. (*b*) 'Suggestion' is a light form of 'Order'. In the same way, 'Smile' is a light form of 'Laugh'.

29. (*b*) 'Interview' is conducted to provide 'Service' and 'Examination' is conducted to provide 'Degree'.

30. (*d*) 'Bihu' is a dance form of 'Asom'. In the same way, 'Bhangra' is a dance form of 'Punjab'.

31. (*c*) Former is one of the subsets of the latter.

32. (*a*) Statute is a legislative body that passes the Law. Similarly, Proviso has a Clause.

33. (*d*) Shape of 'Earth' is 'Round'. Likewise shape of 'Dice' is 'Cube'.

34. (*d*) 'Injured' is the 'Plaintiff' and similarly, 'Accused' is the 'Defendant'.

35. (*d*) As Buddhists gather in pagoda for worship similarly jews gather in synagogue.

36. (*a*) Opposite word relationship.

37. (*b*) Latter is the result of the former.

38. (*c*) Former is the site and latter is the location.

39. (*b*) Both the words belong to the same category.

40. (*b*) 'Music' contains 'Notes' and 'Mathematics' contains 'Numbers'.

41. (*d*) 'Colour' can be seen with the help of 'Eyes' and 'Fragrance' can be sensed with the help of 'Nose'.

42. (*c*) 'Missiles' are ejected through 'Launcher'. Likewise 'Stone' is ejected through 'Catapult'.

43. (*c*) Synonym pair

44. (*b*) Drama is viewed by Audience. Similarly, Game is viewed by Spectators.

45. (*a*) 'Ring' is the symbol of 'Engagement' and 'Handshake' is the symbol of 'Treaty'.

46. (*d*) As, 'Shampoo' is used to wash 'Hair', similarly 'Toothpaste' is used to brush 'Teeth'.

47. (*d*) 'King' lives in 'Palace' and similarly 'Lion' lives in 'Den'.

48. (*a*) As 'Emollient' is used to 'soothe' the skin, similarly a 'Dynamo' serves to 'generate' electricity.

49. (*b*) First indicates the lack of second.

50. (*d*) As 'Poetry' originates from 'Inspiration', similarly 'Thought' originates from 'Mind'.

51. (*d*) 'Hockey' is a 'Game' and 'Latin' is a 'Language'

52. (*a*) 'Letter' is a part of 'Word' and in the same way, 'Page' is a part of 'Book'.

Type 3 Direct or Simple Analogy

In this type of Analogy, two words are given which are related to each other in a particular manner and an another word is given followed by four alternatives. Firstly the candidate is required to identify the relationship between the first two words. Then, the candidate is required to pick that word from the alternatives which bears exactly same relationship to the third word, as the first two bear.

Some solved examples given below will give a better idea about this format

Directions (Example Nos. 21-28) Find the word from the given alternatives which bears exactly same relationship to the third word, as the first two bears.

***Ex* 21** 'Calm' is related to 'Cool' in the same way as 'Abandon' is related to

(a) Down (b) Leave (c) Attract (d) Clear

Sol. (*b*) 'Calm' and 'Cool' have synonymous relationship and the synonym of 'Abandon' is 'Leave'.

***Ex* 22** 'Monkey' is to 'Gibber' as 'Sparrow' is to

(a) Jingle (b) Cackle
(c) Howl (d) Chirp

Sol. (*d*) Sound produced by 'Monkey' is called 'Gibber' and sound produced by 'Sparrow' is called 'Chirp'.

***Ex* 23** 'Melt' is related to 'Liquid' in the same way as 'Freeze' is related to

(a) Ice (b) Crystal
(c) Water (d) Cubes

Sol. (*a*) The term 'Melt' is associated with 'Liquid' because after melting the ice, we obtain liquid. Similarly, the state of 'Water' after freezing is 'Ice'.

***Ex* 24** 'Doctor' is related to 'Stethoscope' in the same way as 'Painter' is related to

(a) Painting (b) Brush
(c) Exhibition (d) Art

Sol. (*b*) 'Stethoscope' is used by a 'Doctor' as a tool to perform his work. Similarly, a 'Painter' uses a 'Brush' as a tool to perform his work.

***Ex* 25** 'Numismatic' is related to 'Coin' in the same way as 'Paleontology' is related to

(a) Earth (b) Soil
(c) Fossils (d) Stones

Sol. (*c*) Study of 'Coins' is known as 'Numismatic'. 'Paleontology' is the science dealing with study of history of mankind with the help of 'Fossils'.

***Ex* 26** 'Cat' is related to 'Mew' in the same way as 'Horse' is related to **[SSC (CPO) 2011]**

(a) Stable (b) Creep (c) Roar (d) Neigh

Sol. (*d*) 'Mew' is the sound produced by 'Cat' and 'Neigh' is the sound produced by 'Horse'.

***Ex* 27** 'Success' is related to 'Joy' in the same way as 'Failure' is related to **[UP B.Ed. 2010]**

(a) Anger (b) Sorrow
(c) Happiness (d) Defeat

Sol. (*b*) 'Success' brings 'Joy', similarly 'Failure' brings 'Sorrow'.

***Ex* 28** 'Town' is related to 'Village' in the same way as 'Urban' is related to **[MAT 2005]**

(a) City (b) Metropolis
(c) Rural (d) Semi-Urban

Sol. (c) Antonymous relationship of words.

Practice Corner 1.3

Build your Confidence...

Directions (Q. Nos. 1-69) In the following questions, two words are given which are related to each other in a particular manner and you have to find the word from the given alternatives which bears exactly same relationship to the third word, as the first two bear.

1. 'Hate' is related to 'Love' in the same way as 'Create' is related to

(a) Make (b) Renovate
(c) Destroy (d) Build

2. 'Bull' is related to 'Cow' in the same way as 'Horse' is related to

(a) Animal (b) Mare
(c) Stable (d) Ment

3. Cup is related to 'Crockery' in the same way as 'Pen' is related to **[UCO Bank (Clerk) 2013]**
(a) Paper (b) Books (c) Stationery (d) Ink
(e) Nib

4. 'Cub' is related to 'Tiger' in the same way as 'Kitten' is related to **[BOI (Clerk) 2010]**
(a) Dog (b) Cat (c) Duck (d) Swan
(e) None of these

5. 'Clock' is related to 'Time' in the same way as 'Metre' is related to **[RRB (Group 'D') 2009]**
(a) Speed (b) Distance (c) Wrist (d) Sand

6. 'Museum' is related to 'Curator' in the same way as 'Prison' is related to
(a) Warden (b) Monitor (c) Manager (d) Jailor

7. 'Hour' is related to 'Second' in the same way as 'Tertiary' is related to
(a) Ordinary (b) Secondary
(c) Primary (d) Intermediary

8. 'Fire' is related to 'Ashes' in the same way as 'Explosion' is related to
(a) Sound (b) Debris (c) Explosive (d) Flame

9. 'Parliament' is related to 'Great Britain' in the same way as 'Congress' is related to
(a) Japan (b) India (c) USA (d) Netherlands

10. 'Sports' is related to 'Logo' in the same way as 'Nation' is related to
(a) Emblem (b) Animal (c) Ruler (d) Anthem

11. 'Data Processing' is related to 'Raw Data' in the same way as 'University' is related to
(a) Teacher (b) Building (c) Students (d) Principal

12. 'Braille' is related to 'Blindness' in the same way as 'Sign language' is related to
(a) Exceptional (b) Touch
(c) Deafness (d) Presentation

13. 'Boat' is related to 'Oar' in the same way as 'Bicycle' is related to
(a) Road (b) Wheel (c) Seat (d) Paddle

14. 'Match' is related to 'Victory' in the same way as 'Examination' is related to
(a) Write (b) Appear (c) Success (d) Attempt

15. 'Flower' is related to 'Essence' in the same way as 'Oven' is related to **[LIC (ADO) 2006]**
(a) Vapour (b) Fire (c) Heat (d) Steam
(e) None of these

16. 'Major' is related to 'Lieutenant' in the same way as 'Squadron Leader' is related to **[SSC (LDC) 2006]**
(a) Group Captain (b) Flying Attendant
(c) Flying Officer (d) Pilot Officer

17. 'Neck' is related to 'Tie' in the same way as 'Waist' is related to
(a) Watch (b) Belt (c) Ribbon (d) Shirt

18. 'Atom' is related to 'Molecule' in the same way as 'Cell' is related to
(a) Matter (b) Nucleus (c) Organism (d) Battery

19. 'Flower' is related to 'Petal' in the same way as 'Book' is related to
(a) Page (b) Content (c) Author (d) Library

20. 'On' is related to 'Off' in the same way as 'Hot' is related to **[BOI (Clerk) 2010]**
(a) Water (b) Switch (c) Tap (d) Liquid
(e) None of these

21. 'Bail' is related to 'Jail' in the same way as 'Water' is related to
(a) Pitcher (b) Container (c) Bath (d) Thirst

22. 'Grass' is related to 'Pasture' in the same way as 'Word' is related to
(a) Sentence (b) Spoken (c) Book (d) Write

23. 'Cell' is related to 'Tissue' in the same way as 'Tissue' is related to
(a) Object (b) Ear (c) Organ (d) Limb

24. 'Vendor' is related to 'Buyer' in the same way as 'Consultant' is related to
(a) Firm (b) Client (c) Advice (d) Consult

25. 'Player' is related to 'Coach' in the same way as 'Pupil' is related to
(a) School (b) Academy (c) Teacher (d) Word

26. 'Save' is related to 'Rescue' in the same way as 'Severe' is related to
(a) Endure (b) Stern (c) Sever (d) Uneasy

27. 'Ignite' is to 'Combustion' as 'Trigger' is to
(a) Gun (b) War (c) Projectile (d) Reaction

28. 'Disease' is related to 'Medicine' in the same way as 'Famine' is related to
(a) Drought (b) River (c) Waterfall (d) Rainfall

29. 'Go' is related to 'Come' in the same way as 'High' is related to **[IBPS (Clerk) 2011]**
(a) Up (b) Low (c) Birth (d) Stand
(e) None of these

30. 'Soldier' is related to 'Army' in the same way as 'Player' is related to **[PNB (PO) 2010]**

(a) Sports (b) Tournament
(c) Games (d) Captain
(e) Team

31. 'Nail' is related to 'Nail cutter' in the same way as 'Hair' is related to **[PNB (PO) 2010]**

(a) Oil (b) Comb (c) Scissors (d) Haircut
(e) Colour

32. 'Win' is related to 'Competition' in the same way as 'Invention' is related to

(a) Product (b) Discovery (c) Trial (d) Laboratory

33. 'Needle' is related to 'Clock' in the same way as 'Wheel' is related to

(a) Drive (b) Vehicle (c) Circular (d) Move

34. 'Crawl' is related to which of the following in the same way as 'Fly' is related to 'Parrot'?

(a) Rabbit (b) Fish (c) Frog (d) Crocodile

35. 'Liberty' is related to 'Slavery' in the same way as 'Danger' is related to

(a) Safety (b) Dangerous (c) Anger (d) Stability

36. 'Blood' is related to 'Vein' in the same way as 'Oil' is related to

(a) Car (b) Engine (c) Pipelines (d) Petrol

37. 'Success' is to 'Failure' as 'Big' is to

(a) Great (b) Good (c) Small (d) Rig

38. 'Pen' is to 'Pencil' as 'Hockey' is to

(a) Football (b) Ground (c) Team (d) Players

39. 'Tall' is related to 'Dwarf' in the same way as 'Kind' is related to

(a) Weak (b) Gentle (c) Cruel (d) Forgive

40. 'Dog' is related to 'Kennel' in the same way as 'Bird' is related to

(a) Tree (b) Nest (c) Chirp (d) Cage

41. 'Book' is to 'Open' as 'Door' is to

(a) House (b) Shut (c) Close (d) Wood

42. 'Usual' is to 'Common' as 'Light' is to

(a) Bright (b) Black (c) Dark (d) Glow

43. 'Pardon' is to 'Penalty' as 'Definitely' is to

(a) Actually (b) Probably (c) Urgently (d) Positively

44. 'Uneasy' is to 'Quiet' as 'Fit' is to

(a) Proper (b) Suitable (c) Pertinent (d) Unfit

45. 'Trap' is to 'Net' as 'Trade' is to

(a) Earning (b) Money (c) Profit (d) Pursuit

46. 'Cow' is related to 'Herbivorous' in the same way as 'Tiger' is related to **[CBI (PO) 2011]**

(a) Omnivorous (b) Carnivorous
(c) Herbivorous (d) Multivorous
(e) None of these

47. 'Sink' is related to 'Float' in the same way as 'Destroy' is related to **[CBI (PO) 2010]**

(a) Enemy (b) Demolish (c) Alive (d) Peace
(e) Create

48. 'Gram' is related to 'Mass' in the same way as 'Centimetre' is related to **[CBI (PO) 2009]**

(a) Area (b) Volume (c) Length (d) Sound
(e) Energy

49. A 'Square' is related to 'Cube' in the same way as a 'Circle' is related to **[IBPS (Clerk) 2011]**

(a) Sphere (b) Circumference
(c) Diameter (d) Area
(e) None of these

50. 'Iron' is related to 'Solid' in the same way as 'Mercury' is related to **[IBPS (Clerk) 2011]**

(a) Solid (b) Gas (c) Liquid (d) Vapour
(e) None of these

51. 'Mirror' is related to 'Reflection' in the same way as 'Water' is related to **[RRB (ALP) 2005]**

(a) Conduction (b) Disperson
(c) Immersion (d) Refraction

52. 'Dream' is related to 'Reality' in the same way as 'Falsehood' is related to **[SSC (CPO) 2007]**

(a) Correctness (b) Fairness
(c) Truth (d) Untruth

53. 'Face' is related to 'Expression' in the same way as 'Hand' is related to

(a) Gesture (b) Work (c) Handshake (d) Pointing

54. 'Wine' is related to 'Grapes' in the same way as 'Vodka' is related to

(a) Apples (b) Potatoes (c) Oranges (d) Flour

55. 'Golf' is related to 'Holes' in the same way as 'Baseball' is related to

(a) Innings (b) Goal (c) Points (d) Serve

56. 'England' is related to 'Atlantic Ocean' in the same way as 'Greenland' is related to

(a) Pacific Ocean (b) Atlantic Ocean
(c) Arctic Ocean (d) Antarctica Ocean

57. 'Demographer' is related to 'People' in the same way as 'Philatelist' is related to
(a) Fossils
(b) Stamps
(c) Photography
(d) Music

58. 'Eye' is to 'See' in the same way as 'Ear' is to
(a) Ring
(b) Sound
(c) Hear
(d) Smell

59. 'Disease' is related to 'Pathology' in the same way as 'Planet' is related to
(a) Sun
(b) Satellite
(c) Astrology
(d) Astronomy

60. 'Mountain' is related to 'Valley' in the same way as 'Enemy' is related to
(a) Cruel
(b) Stranger
(c) Country
(d) Friend

61. 'Horse' is related to 'Hoof' in the same way as 'Eagle' is related to
(a) Claw
(b) Clutch
(c) Leg
(d) Foot

62. 'Cube' is related to 'Square' in the same way as 'Square' is related to
(a) Plane
(b) Triangle
(c) Line
(d) Point

63. 'Much' is related to 'Many' in the same way as 'Measure' is related to
(a) Count
(b) Calculate
(c) Measure
(d) Weight

64. 'Radish' is related to 'Root' in the same way as 'Rose' is related to **[IBPS (Clerk) 2011]**
(a) Garden
(b) Fragrance
(c) Thorn
(d) Flower
(e) None of these

65. 'Lion' is 'Prowl' as 'Bear' is to **[UP B.Ed. 2009]**
(a) Trot
(b) Strut
(c) Lumber
(d) Amble

66. 'Crime' is related to 'Police' in the same way as 'Flood' is related to
(a) Rain
(b) River
(c) Dam
(d) Reservoir

67. 'Butterfly' is to 'Caterpillar' as 'Horse' is to **[UP B.Ed. 2010]**
(a) Cub
(b) Colt
(c) Mare
(d) Chick

68. 'Metal' is related to 'Sculptor' in the same way as 'Canvas' is related to
(a) Painter
(b) Cloth
(c) Colours
(d) Painting

69. 'Ship' is related to 'Captain' in the same way as 'Newspaper' is related to
(a) Reader
(b) Printer
(c) Publisher
(d) Editor

Response & Interpretations **(1.3)**

1. *(c)* As 'Hate' is opposite of 'Love', similarly 'Create' is opposite of 'Destroy'.

2. *(b)* Male female relationship exists in this case.

3. *(c)* 'Cup' is related to 'Crockery' in the same way as 'Pen' is related to 'Stationery'.

4. *(b)* As 'Cub' is young one of 'Tiger', similarly 'Kitten' is young one of 'Cat'.

5. *(b)* As a 'Clock' measures 'Time', similarly 'Distance' is measured in 'Metres'.

6. *(d)* Person incharge of a 'Museum' is known as 'Curator'. Likewise person incharge of a 'Prison' is called 'Jailor'.

7. *(c)* 'Hour' is the third position after 'Second' in time measurement. Likewise 'Tertiary' is the third position after 'Primary' in the order of ranking.

8. *(b)* 'Fire' reduces anything to 'Ashes' in the same way as 'Explosion' reduces anything to 'Debris'.

9. *(c)* The supreme law making authority of 'Great Britain' is known as 'Parliament'. In the same way, law making supreme body of 'USA' is known as 'Congress'.

10. *(a)* The symbol 'Logo' is related to 'Sports'. Likewise 'Emblem' is related to a 'Nation'.

11. *(c)* 'Data Processing' is the process of using 'Raw Data' to shape it in the final product. Likewise 'University' is the place which shapes the 'Students' for their career.

12. *(c)* 'Braille' is the technique of reading and writing for the blind persons. Similarly, 'Sign language' is the technique of reading and writing for deaf persons.

13. *(d)* 'Oar' is a device used to push a 'Boat'. Likewise 'Paddle' is used to push the 'Bicycle'.

14. *(c)* One of the outcomes of a 'Match' is 'Victory'. Likewise 'Success' is one of the outcomes of 'Examination'.

15. *(c)* Second denotes the trait for which first is used.

16. *(c)* In army and air force 'Major' and 'Squadron Leader' are equivalent ranks and so are 'Lieutenant' and 'Flying Officer'.

17. *(b)* 'Tie' is worn in the 'Neck' and 'Belt' is worn on the 'Waist'.

18. *(c)* First constitutes the second.

19. *(a)* 'Petals' constitute a 'Flower', likewise 'Pages' constitute a 'Book'.

20. *(e)* As 'On' and 'Off' are antonyms, similarly 'Hot' and 'Cold' are also antonyms.

21. *(d)* 'Bail' releases a person from 'Jail' and 'Water' quenches 'Thirst'.

22. (*a*) 'Pasture' is collection of 'Grass' and 'Sentence' is a collection of 'Words'.

23. (*c*) 'Tissue' is made up of 'Cells' and 'Organ' is made up of 'Tissues'.

24. (*b*) 'Buyer' is the source of income for the 'Vendor'. Likewise 'Client' is the source of income for 'Consultant'.

25. (*c*) 'Coach' guides the 'Player'. In the same way, 'Teacher' guides the 'Pupil'.

26. (*b*) 'Save' and 'Rescue' are same in meaning and 'Severe' and 'Stern' are also same in meaning.

27. (*d*) 'Ignite' leads to 'Combustion' and 'Trigger' leads to violent 'Reaction'.

28. (*d*) As 'Disease' can be cured by taking proper 'Medicine', similarly famine can be avoided by adequate 'Rainfall'.

29. (*b*) As 'Go' is opposite to 'Come', similarly 'High' is opposite to 'Low'.

30. (*e*) Soldier is a part of 'Army' and similarly 'Player' is a part of 'Team'.

31. (*c*) Latter is used to cut the former.

32. (*c*) 'Competition' ends in 'Win' and similarly a 'Trial' ends in Invention.

33. (*b*) 'Needle' is a part of 'Clock' in the same way as 'Wheel' is a part of 'Vehicle'.

34. (*d*) 'Parrot' flies and 'Crocodile' crawls.

35. (*a*) 'Liberty' is opposite to 'Slavery' and 'Danger' is opposite to 'Safety'.

36. (*c*) 'Blood' flows in 'Veins', in the same way 'Oil' flows in 'Pipelines'.

37. (*c*) 'Success' is opposite to 'Failure'. In the same way 'Big' is opposite to 'Small'.

38. (*a*) 'Pen' and 'Pencil' are the articles to write and 'Hockey' and 'Football' are the items to play.

39. (*c*) 'Tall' is opposite to 'Dwarf' and 'Cruel' is opposite to 'Kind'.

40. (*d*) 'Kennel' is the place where pet 'Dogs' are kept and 'Cage' is the place where pet 'Birds' are kept.

41. (*b*) A 'Book' is 'opened' to read it, likewise a 'Door' is 'shut' to close it.

42. (*d*) As 'Usual' and 'Common' are the words conveying the same meaning, similarly 'Light' and 'Glow' are synonyms to each other.

43. (*b*) 'Pardon' and 'Penalty' are opposite to each other. Similarly, 'Definitely' and 'Probably' are opposite to each other.

44. (*d*) 'Uneasy' and 'Quiet' are opposite to each other. Likewise, 'Fit' and 'Unfit' are opposite to each other.

45. (*b*) 'Net' is required to 'Trap' and 'Money' is required to 'Trade'.

46. (*b*) As 'Cow' eats vegetarian foods, therefore she is 'Herbivorous'. Similarly, 'Tiger' eats fleshy foods and therefore a tiger is 'Carnivorous'.

47. (*e*) 'Sink' and 'Float' are antonyms. In the same way, 'Destroy' and 'Create' are antonyms.

48. (*c*) 'Gram' is the unit of 'Mass' and 'Centimetre' is the unit of 'Length'.

49. (*a*) A square is a two dimensional figure having all its sides equal and a cube is its corresponding three dimensional figure. Likewise, three dimensional figure corresponding to a circle is a sphere.

50. (*c*) As 'Iron' is found in solid state, similarly mercury is found in liquid state.

51. (*d*) Light rays falling on a mirror undergo reflection and those falling on water undergo refraction.

52. (*c*) Antonymous relationship of words exists in this case.

53. (*a*) 'Expression' of a person is read from the 'Face'. Likewise 'Gesture' of a person is read from the position of 'Hands'.

54. (*d*) 'Wine' is made from 'Grapes' and 'Vodka' is made from 'Flour'.

55. (*a*) 'Holes' is the term which is related to 'Golf'. In the same way, 'Innings' is the term which is related to 'Baseball'.

56. (*c*) 'England' is situated in 'Atlantic Ocean'. 'Greenland' is situated in 'Arctic Ocean'.

57. (*b*) As 'Demographer' is related with the study of statistics related to 'People', similarly 'Philatelist' is related with the study of 'Stamps'.

58. (*c*) The function of 'Eye' is to 'See' and that of 'Ear' is to 'Hear'.

59. (*d*) 'Pathology' is the branch of medical science which deals with 'Diseases' and 'Astronomy' is the study by which we come to know about 'Planets'.

60. (*d*) 'Mountain' is antonym of 'Valley'. Likewise 'Friend' is the antonym of 'Enemy'.

61. (*a*) The lower part of feet of 'Horse' is known as 'Hoof'. In the same way, lower part of feet of 'Eagle' is known as 'Claw'.

62. (*c*) A 'Cube' comprises of 'Squares' on all of its surfaces. In the same way a 'Square' comprises of 'Lines' on all of its sides.

63. (*a*) As 'Much' is synonym of 'Many', similarly 'Measure' is synonym of 'Count'.

64. (*d*) As 'Radish' is a modified form of 'Root', similarly 'Rose' is a 'Flower'.

65. (*c*) 'Prowl' is the name given to the movement of 'Lion' and similarly 'Lumber' is the name given to the movement of 'Bear'.

66. (*c*) 'Police' is meant to stop 'Crime' and 'Dam' is constructed to prevent 'Flood'.

67. (*b*) Caterpillar is the young-one of 'Butterfly' and similarly 'Colt' is the young-one of 'Horse'.

68. (*a*) 'Sculptor' works on 'Metal' and 'Painter' works on 'Canvas'.

69. (*d*) 'Captain' is responsible for all operations on 'Ship' and 'Editor' is responsible for all works in 'Newspaper'.

Type 4 Double Analogy

In such type of questions, two words are given on both the left and right side of the sign of double colon (::). On both the sides, one of the two words is left out marked as A and B or I and II. The question is followed by four alternatives from which a candidate is required to find out the correct pair of words which will make an appropriate analogical relationship between the two words to the left of the sign of double colon and the same relationship between the two words to the right of the sign of double colon (::).

Some solved examples given below will give a better idea about these type of questions

Directions (Example Nos. 29-36) Find out the correct pair of words which will make on appropriate analogical relationship between the two words to the left of the sign (::) and the same relationship between the two words to the right of the sign (::).

***Ex* 29** A : Wheat : : Brick : B

(a) A. Bread , B. Clay
(b) A. Cereal, B. Clay
(c) A. Farmer, B. Mason
(d) A. Farmer, B. Clay

Sol. (*a*) 'Wheat' is used to make 'Bread'. Similarly, 'Clay' is used to make 'Brick'.

***Ex* 30** A : Garland : : Star : B

(a) A. Perfume, B. Sun (b) A. Flower, B. Galaxy
(c) A. Hero, B. Shine (d) A. Honour, B. Night

Sol. (*b*) 'Flower' is a part of 'Garland'. Similarly, 'Star' is a part of 'Galaxy'.

***Ex* 31** A : Prison : : Curator : B

(a) A. Culprit, B. Museum (b) A. Cell, B. Museum
(c) A. Jailor, B. Museum (d) A. Warden, B. Cure

Sol. (*c*) 'Jailor' looks after the 'Prison'. Similarly, 'Curator' looks after the 'Museum'.

***Ex* 32** A : Lungs : : B : Nut

(a) A. Respiration, B. Almond
(b) A. Breathe, B. Almond
(c) A. Air, B. Shell
(d) A. Ribs, B shell

Sol. (*d*) 'Ribs' protect the 'Lungs'. Similarly, ' Shell ' protects the 'Nut'.

***Ex* 33** A : Sword : : Thread : B

(a) A. Dagger, B. Needle (b) A. Kill, B. Stitch
(c) A. Knife, B. Rope (d) A. Warrior, B. Tailor

Sol. (*c*) 'Sword' is the enlarged form of 'Knife'. Similarly, 'Rope' is the enlarged form of 'Thread'.

***Ex* 34** I : Distance : : Kilogram : II

I. (A) Far (B) Metre (C) Europe (D) Travel
II. (P) Heavy (Q) Ounce (R) Weight (S) Noise
(a) AP (b) BP (c) BQ (d) BR

Sol. (*d*) First is a unit to measure the second.

***Ex* 35** I : Horse : : Bray : II

I. (A) Neigh (B) Hoof (C) Ride (D) Saddle
II. (P) Relay (Q) Pony (R) Wagon (S) Donkey
(a) AP (b) AS (c) BS (d) CR

Sol. (*b*) First is the sound produced by second.

***Ex* 36** I : England : : Lira : II

I. (A) London (B) Pound (C) King (D) Colony
II. (P) Italy (Q) Mexico (R) Mandolin (S) Money
(a) AP (b) AQ (c) BP (d) AS

Sol. (*c*) First is the currency of the country denoted by the second.

Practice Corner 1.4

Build your Confidence...

Directions (Q. Nos. 1-13) In the following questions, find out the correct pair of words which will make an appropriate analogical relationship between the two words to the left of the sign of double colon and the same relationship between the two words to the right of the sign of double colon (::).

1. A : Ship :: Platform : B

(a) A. Caption, B. Coolie (b) A. Port, B. Station
(c) A. Quay, B. Train (d) A. Shore, B. Bench

2. A : Roots :: House : B

(a) A. Branches, B. Walls (b) A. Trunk, B. Floor
(c) A. Flower, B. Walls (d) A. Tree, B. Foundation

3. A : Square :: Arc : B

(a) A. Line, B. Circle
(b) A. Perimeter, B. Circumference
(c) A. Line, B. Diameter
(d) A. Rectangle, B. Chord

4. A : Flower :: Milky way : B
(a) A. Plant, B. Sky (b) A. Fruit, B. Planet
(c) A. Plant, B. Galaxy (d) A. Garden, B. Star

5. A : Water :: Thermometer : B
(a) A. Humidity, B. Fever
(b) A. Pitcher, B. Mercury
(c) A. Rain, B. Doctor
(d) A. Evaporation, B. Temperature

6. A : Winter :: B : Malaria
(a) A. Quilt, B. Quinine (b) A. Cold, B. Epidemic
(c) A. Cold, B. Mosquito (d) A. Wool, B. Fever

7. Explosion : I :: Locust : II
I. (A) Bomb (B) Ruin (C) debris (D) Smoke
II. (P) Crop (Q) Holocaust (R) Pest (S) Field
(a) AS (b) BR (c) CQ (d) DP

8. A : Dog :: B : Goat
(a) A. Puppy, B. Pony (b) A. Puppy, B. Lamb
(c) A. Bitch, B. Lamb (d) A. Colt, B. Pony

9. A : Gardening :: Bat : B
(a) A. Grass, B. Playing (b) A. Flowers, B. Ball
(c) A. Spade, B. Cricket (d) A. Gardner, B. Cricket

10. A : Prune :: Hair : B
(a) A. Wool, B. Shear (b) A. lawn, B. Mow
(c) A. Beard, B. Shave (d) A. Shrub, B. Trim

11. A : Herd :: Star : B
(a) A. Cattle, B. Constellation (b) A. Wolves, B. Solar-System
(c) A. Sheep, B. Sum (d) A. Fish, B. Planet

12. I. Canada :: Rangoon : II
I. (A) Detroit (B) Florida (C) Toronto (D) Alberta
II. (P) Indonesia (Q) Burma (R) East Pakistan (S) Ceylon
(a) BQ (b) CP (c) CQ (d) CS

13. I : Bird :: Shedding : II
I. (A) Calling (B) Flying (C) Migrating (D) Moulting
II. (P) Barn (Q) Dog (R) Hay (S) Farm
(a) BP (b) BR
(c) DP (d) DS

Response & Interpretations (1.4)

1. (*c*) First is the place where second stops temporarily.
2. (*d*) Second is the lowest part of the first.
3. (*a*) First is a part of the second.
4. (*d*) Second is a part of first.
5. (*b*) First contains the second.
6. (*a*) First provides protection from second.
7. (*c*) Second is the left over after the action of first.
8. (*b*) First is the young one of second.
9. (*c*) First is used in the second.
10. (*d*) Second represents cutting off the unnecessary parts of the first.
11. (*a*) Second is the collective group of first.
12. (*c*) Second denotes the country in which the city denoted by the first is located.
13. (*d*) Birds undergo moulting to shed feathers in changing plumage. Similarly, farms undergo shedding of leaves before a new growth.

Type 5 Similar Word Selection

In such type of questions, a group of three/four words is given followed by four other words as options. The candidate is required to choose the alternative which is similar to the given words.

Some solved examples given below will give a better idea about this type of questions

Directions (Example Nos. 37-41) Out of the four given alternatives, choose that alternative as your answer which is similar to the given words.

***Ex* 37** Lucknow : Mumbai : Kolkata
(a) Patna (b) Bikaner (c) Pune (d) Ludhiana

Sol. (*a*) Lucknow is the capital of Uttar Pradesh, Mumbai is the capital of Maharashtra and Kolkata is the capital of West Bengal. Therefore, Lucknow, Mumbai and Kolkata are the capitals of Indian states. Similarly, Patna is the capital of Bihar.

***Ex* 38** Abandon : Forsake : Desert
(a) Down (b) Frown
(c) Prank (d) Leave

Sol. (*d*) All the given words (Abandon, Forsake and Desert) are synonymous having meaning 'Leave'. Hence, the other synonymous word from the given alternatives will be 'Leave'.

***Ex* 39** Ear : Nose : Lips
(a) Finger (b) Lungs (c) Heart (d) Kidney

Sol. (a) 'Ear', 'Nose' and 'Lips' are all external parts of the human body and so is the 'Finger'.

***Ex* 40** Which of the following is the same as 'Dollar', 'Yen', 'Rupee'?
(a) Knessep (b) Shora
(c) Pound (d) Ground

Sol. (c) 'Dollar', 'Yen' and 'Rupee' are the currencies of different countries and so is the 'Pound'.

***Ex* 41** Which of the following is the same as 'India', 'Pakistan', Afghanistan'?
(a) Germany (b) England
(c) Sri Lanka (d) USA

Sol. (c) India, Pakistan and Afghanistan are all Asian countries and so is 'Sri Lanka'.

Practice Corner **1.5**

Build your Confidence...

Directions (Q. Nos. 1-30) In the following questions, three words are given which have something in common among themselves. Out of the four given alternatives, choose that alternative as your answer which is similar to the given words.

1. Bleat : Howl : Gibber
(a) Grunt (b) Leap (c) Stuck (d) Duck

2. Iron : Copper : Zinc **[RRB (GG) 2005]**
(a) Ceramic (b) Carbon (c) Silver (d) Coke

3. Eyes : Tongue : Ear
(a) Finger (b) Thumb (c) Knee (d) Nose

4. Intestine : Liver : Heart
(a) Blood (b) Hand (c) Forehead (d) Kidney

5. Ohm : Watt : Ampere
(a) Electricity (b) Volt (c) Hour (d) Light

6. Rice : Wheat : Maize **[RRB (TC/CC) 2005]**
(a) Jowar-Bajra (b) Tobacco (c) Jute (d) Cotton

7. Branch : Stem : Leaf
(a) Tree (b) Chair (c) Root (d) Glass

8. Neigh : Bray : Bark
(a) Gibber (b) Peseta (c) Majlis (d) Leaf

9. Lion : Tiger : Bear **[UP B.Ed. 2009]**
(a) Cow (b) Cat (c) Panther (d) Buffalo

10. Calf : Kid : Pup
(a) Infant (b) Young (c) Larva (d) Animal

11. Which of the following is same as 'Bhilai, Rourkela, Durgapur'? **[RRB (TC/CC) 2005]**
(a) Chandigarh (b) Baroda (c) Lucknow (d) Bokaro

12. Odissi : Kathak : Bharatnatyam
(a) Kathakali (b) Gumar (c) Tamasha (d) Nautanki

13. Which of the following is the same as 'Sty', 'Stable', 'Kennel'? **[UP B.Ed. 2009]**
(a) Whale (b) Horse (c) Burrow (d) Room

14. Which of the following is the same as 'Bitch', 'Mare', 'Doe'?
(a) Fox (b) Dog (c) Vixen (d) Horse

15. Which of the following is the same as 'Durga', 'Kali', 'Saraswati'?
(a) Ganesh (b) Worship (c) Laxmi (d) Shiv

16. Which of the following is the same as 'Varanasi', 'Kanpur', 'Lucknow'?
(a) Gaya (b) Jodhpur (c) Ghaziabad (d) Bhagalpur

17. Which of the following is the same as 'Norway', 'Poland', 'Spain'? **[RRB (ASM) 2005]**
(a) France (b) Rome (c) Kenya (d) Tokyo

18. Which of the following is the same as 'Flood', 'Fire', 'Cyclone'? **[RRB (ASM) 2004]**
(a) Damage (b) Earthquake (c) Rain (d) Accident

19. Which of the following is the same as 'Count', 'List', 'Weight'?
(a) Compare (b) Sequence (c) Number (d) Measure

20. Which of the following is the same as 'Steel', 'Bronze', 'Brass'?
(a) Calcite (b) Magnalium (c) Methane (d) Zinc

21. Rabbit : Rat : Mole
(a) Mongoose (b) Frog (c) Earthworm (d) Ant

22. Grunt : Bray : Bleat
(a) Bark (b) Crock (c) Cry (d) Scream

23. Crocodile : Lizard : Chameleon
(a) Whale (b) Lion (c) Snake (d) Hen

24. Pen : Pencil : Rubber
(a) Page (b) Cell (c) Pillow (d) TV

25. Dhoni : Tendulkar : Sehwag
(a) Saniya (b) Shahrukh (c) Dravid (d) Aadvani

26. Sapphire : Emerald : Diamond
(a) Ruby (b) Bronze (c) Gold (d) Silver

27. LBW : Slip : Cover
(a) Dence (b) Dribble (c) Corner (d) Chinaman

28. Lahore : Faislabad : Islamabad
(a) Kabul (b) Ahmedabad
(c) Sialcot (d) Dhaka

29. Radiology : Pathology : Cardiology
(a) Biology (b) Zoology (c) Geology (d) Hematology

30. Release : Liberate : Emancipate
(a) Pardon (b) Ignore (c) Quit (d) Free

Response & Interpretations (1.5)

1. (*a*) All are the sounds produced by animals.
2. (*c*) All are metals.
3. (*d*) All are human sense organs.
4. (*d*) All are internal organs of human body.
5. (*b*) All are the measuring units of electricity.
6. (*a*) All are food crops.
7. (*c*) All are parts of tree.
8. (*a*) All are sounds produced by animals.
9. (*c*) All are wild animals.
10. (*c*) All are young ones of animals.
11. (*d*) All are industrial towns famous for steel plants.
12. (*a*) All are classical forms of Indian dance.
13. (*c*) All are dwelling places of animals.
14. (*c*) All are female animals.
15. (*c*) All are the names of Hindu goddesses.
16. (*c*) All are the cities of Uttar Pradesh.
17. (*a*) All are European countries.
18. (*b*) All are natural calamities.
19. (*d*) All are terms related to quantitative measurement.
20. (*b*) All are alloys.
21. (*a*) All are rodents.
22. (*a*) All are the sounds produced by animals.
23. (*c*) All are reptiles.
24. (*a*) All are stationery goods.
25. (*c*) All are Indian cricketers.
26. (*a*) All are precious stones.
27. (*d*) All are terms of cricket.
28. (*c*) All are Pakistani cities.
29. (*d*) All are branches of medical sciences.
30. (*d*) All are synonyms.

Type 6 **Analogy Detection**

In such type of questions, the candidate is required to find out the common feature among the given words and pick the alternative that mentions the properties common to the given words.

Some solved examples given below will give a better idea about this format

Directions (Example Nos. 42-45) Find out the common feature among the given words and pick the alternative that mentions the properties common to the given words.

Ex **42** Nose : Eyes : Ears
(a) They are internal part of human body
(b) They are not the external part of human body
(c) They are parts of the body below waist
(d) They are parts of the body above neck

Sol. (*d*) 'Nose', 'Eyes' and 'Ears' are the parts of human body above neck.

Ex **43** Dhoni : Yuvraj : Dravid
(a) Cricketers
(b) Athlete
(c) Politicians
(d) Singers

Sol. (*a*) It is clear that the common feature among Dhoni, Yuvraj and Dravid is that they are cricketers.

Ex **44** Cinema : Press : Television

(a) They are means of entertainment
(b) They are means of mass media
(c) All are public undertakings
(d) They give word wide news

Sol. (*b*) All are means of mass media.

Ex **45** Room : Kitchen : Bathroom

(a) Ground
(b) Road
(c) Bricks
(d) House

Sol. (*d*) All are parts of a house.

Practice Corner **1.6**

Build your Confidence...

Directions (Q. Nos. 1-19) Three words are given in each question, which have something in common among themselves. Out of the four given alternatives, choose the most appropriate description about these three words.

1. Ganga : Narmada : Tapti
(a) They are name of rivers
(b) They are dance form of India
(c) They are the currency of different countries
(d) They are the parliaments name of different countries

2. Leap : Frisk : Trot
(a) They are youngone of animals
(b) They are Indian monuments
(c) They are movement of animals
(d) They are the name of famous zoological parks

3. Pen : Rubber : Pencil
(a) They are goods for all purpose
(b) They are stationery goods
(c) They are famous Indian sites
(d) They are sports terms

4. Sunday : Monday : Saturday
(a) They are name of the years
(b) They are name of the months
(c) They are name of the week days
(d) They are name of the rivers

5. Sale : Tale : Male
(a) They have 2 vowels
(b) They have 4 consonants
(c) The words have no vowels
(d) The words have no consonants

6. Peso : Won : Taka
(a) They are famous monuments
(b) They are name of the young ones of animals
(c) They are synonymous words
(d) None of the above

7. Jaipur : Bengaluru : Mumbai
(a) They are the cities in Rajasthan
(b) They are the famous business cities of India
(c) They are the three biggest villages of India
(d) They are the capitals of Indian states

8. Colombo : Kathmandu : Havana
(a) They are African cities
(b) They are European cities
(c) They are capitals of countries
(d) They are sports cities

9. Squeak : Hiss : Howl
(a) They are names of animals
(b) They are currencies
(c) They are biggest animals on earth
(d) They are sound produced by animals

10. Kathak : Bharatnatyam : Odissi
(a) They are the name of music instruments
(b) They are the classical dance forms of India
(c) They are the folk dance forms of India
(d) They are the names of Indian tribes

11. Indira : Nehru : Benazir
(a) They were Presidents
(b) They were Prime Ministers
(c) They were sports persons
(d) They were Indian politicians

12. Mohinder : Gavaskar : Azaharuddin
(a) They were Indian Athlets
(b) They were Indian foreign ministers
(c) They were cicket umpires
(d) They are former Indian cricketers

13. Folketing : Stortling : Knesset
(a) They are the name of currencies
(b) They are the name of rivers
(c) They are the name of Parliaments
(d) They are the name of cities

14. Car : Bike : Bus
(a) They are accelerator
(b) They are mode of transport
(c) They have wheels
(d) They are run by a person

15. Irna : PTI : Xin-Era
(a) They are newspapers
(b) They are computer manufacturing companies
(c) They are news agencies
(d) They are publishing houses

16. Pitcher : Dusra : Bunker
(a) They are parliament's name
(b) They are dwelling places of animals
(c) They are sports terms
(d) They are terms related to cricket

17. Mamb : Krait : Viper
(a) They are insects (b) They are haunting spirits
(c) These are boot polishes (d) These are snakes

18. Metre : Mile : Kilometre
(a) They are units of electricity
(b) They are units of measuring anything
(c) They are units of distance
(d) They are units of weight

19. Crocodile : Whale : Hippopotamus
(a) They are animals (b) They are domestic animals
(c) They are land animals (d) They are water animals

Directions (Q. Nos. 20-44) Three words are given in each question below which have something in common among themselves. Choose one out of the four given alternatives, which mentions the quality common to the three given words.

20. Chair : Table : Stool
(a) School (b) Office (c) Company (d) Furniture

21. Pen : Pencil : Ink
(a) Education (b) Writing (c) Teaching (d) Stationery

22. Snake : Crocodile : Lizard
(a) Animals (b) Insects (c) Reptiles (d) Domestic

23. New York : Washington : Orlando
(a) Australia (b) Germany (c) Sri Lanka (d) USA

24. Moscow : Paris : Athens
(a) Cities (b) Asia (c) Capitals (d) Countries

25. Mizoram : Lucknow : Chennai
(a) East (b) Capital (c) North (d) South

26. Kyat : Yuan : Baht
(a) Currency (b) Cities
(c) Monuments (d) Parliament

27. Minute : Hour : Second
(a) Distance (b) Weight (c) Time (d) Length

28. Crowd : Shoal : Team
(a) Individual (b) Fish (c) Woman (d) Group

29. Duma : Majlis : Khural
(a) Parliament (b) City
(c) Currency (d) Monuments

30. Lion : Tiger : Bear
(a) Child (b) Fawn (c) Cub (d) Foal

31. Rice : Barley : Wheat
(a) Fruits (b) Vegetables (c) Cereals (d) Agriculture

32. Football : Hockey : Tennis
(a) Athletes (b) Indo (c) Games (d) Aquatic

33. Beetle : Grasshopper : Wasp
(a) Cricket (b) Insects (c) Pesticides (d) Butterfly

34. Mother : Sister : Daughter
(a) Relation (b) Aged (c) Females (d) Family

35. Doctor : Nurse : Compounder
(a) School (b) Hospital (c) Office (d) Shop

36. Volga : Seine : Nile
(a) Mountains (b) Rifts (c) Hills (d) Rivers

37. Shirt : Hat : Coat
(a) Dress (b) Trousers (c) Uniform (d) Tailor

38. Ant : Fly : Bee
(a) Termite (b) Insect (c) Lizard (d) Small

39. Kandla : Paradeep : Haldia
(a) Seas (b) Grounds (c) Ports (d) Industry

40. Pluto : Mercury : Saturn
(a) Marsh (b) Earth (c) Jupiter (d) Planets

41. Diesel : Kerosine : Petrol
(a) Coal (b) Fuel
(c) Firework (d) Engine

42. Hat : Turban : Cap
(a) Finger (b) Legs
(c) Head (d) Neck

43. Mustard : Groundnuts : Sesame
(a) Oil seeds (b) Roots
(c) Fruits (d) Politicians

44. Amitabh : Shahrukh : Aamir
(a) Singers (b) Players
(c) Actors (d) Politicians

Response & Interpretations **(1.6)**

1. (*a*) All are the names of rivers.

2. (*c*) 'Leap' is the movement of rabbit; 'Frisk' is the movement of 'Lamb' and 'Trot' is the movement of 'Donkey'.

3. (*b*) All are stationery goods.

4. (*c*) All are week days.

5. (*a*) They have two vowels 'a' and 'e'.

6. (*d*) None of the options is correct as they are the names of currencies.

7. (*d*) 'Jaipur' is the capital of 'Rajasthan'; 'Bengaluru' is the capital of 'Karnataka' and 'Mumbai' is the capital of 'Maharashtra'.

8. (*c*) 'Colombo' is the capital of Sri Lanka; 'Kathmandu' is the capital of 'Nepal' and 'Havana' is the capital of 'Cuba'.

9. (*d*) 'Squeak' is the sound produced by Mice; Hiss is the sound produced by Snake and Howl is the sound produced by Jackal.

10. (*b*) 'Kathak' is the classical dance of North India; 'Bharatnatyam' is the classical dance of Tamilnadu while 'Odissi' is the classical dance of Orissa.

11. (*b*) Indira and Nehru were the Prime Ministers of India, while Benazir was the Prime Minister of Pakistan.

12. (*d*) All are former Indian cricketers.

13. (*c*) 'Folketing' is the parliament of 'Denmark'; 'Stortling' is the parliament of 'Norway', 'Knesset' is the parliament of Israel.

14. (*b*) They all are modes of transport.

15. (*c*) 'PTI' is an Indian news agency; 'Irna' is a news agency in Iran while 'Xin-Era' is a news agency in China.

16. (*c*) 'Pitcher' is a term used in Baseball; 'Dusra' is a term used in cricket and 'Bunker' is a term used in polo.

17. (*d*) These all are snakes.

18. (*c*) These all are units of distance.

19. (*d*) These all are water animals.

20. (*d*) All are parts of furniture.

21. (*d*) All are stationery goods.

22. (*c*) All creep and hence they come under the class of reptiles.

23. (*d*) All are cities of USA.

24. (*c*) 'Moscow' is the capital of 'Russia', 'Paris' is the capital of France and 'Athens' is the capital of Greece.

25. (*b*) All are capital cities of India. 'Mizoram' is the capital of Nagaland; 'Lucknow' is the capital of Uttar Pradesh; 'Chennai' is the capital of Tamil Nadu.

26. (*a*) 'Kyat' is the currency of Myanmar; 'Yuan' is the currency of China and 'Baht' is the currency of Thailand.

27. (*c*) All are units of time.

28. (*d*) All represent group. 'Crowd' is a group of people; 'Shoal' is a group of fish and 'Team' is a group of players.

29. (*a*) All are the names of parliaments. 'Duma' is the parliament of Russia; Maqlis is the parliament of Iran/Maldives/Malaysia and 'Khural' is the parliament of Mangolia.

30. (*c*) Young ones of given animals are called cub.

31. (*c*) All are cereals.

32. (*c*) All are games.

33. (*b*) All are insects.

34. (*c*) All are females.

35. (*b*) All work in the hospital.

36. (*d*) All are rivers.

37. (*a*) All are dress parts.

38. (*b*) All are insects.

39. (*c*) All the given names are port towns.

40. (*d*) All the given names are planets.

41. (*b*) All are the types of 'fuel'.

42. (*c*) All are headwears.

43. (*a*) All are oil seeds.

44. (*c*) All are bollywood 'Actors'.

Type 7 **Multiple Word Analogy**

In such type of analogy a group of three/four inter-related words is given. The candidate is required to find out the relationship among these words and choose another group with similar relationship, from the options provided.

The solved examples given below will give a better idea about this type of questions.

Directions (Example Nos. 46-47) Find out the relationship among these words and choose another group with similar relationship from the options provided.

Ex **46** Furniture : Table : Almirah

(a) Building : Wall : Brick
(b) Fruit : Orange : Apple
(c) Mother : Father : Sister
(d) Sea : Road : City

Sol. (*b*) 'Table' and 'Almirah' are both 'Furniture' and similarly 'Orange' and 'Apple' are both 'Fruits'. Clearly, both second and third belong to the class denoted by the first.

Ex **47** Pink : Red : White

(a) Brown : Black : Blue
(b) Green : Blue : Yellow
(c) Orange : Yellow : Black
(d) Yellow : Red : Green

Sol. (*b*) 'Pink' is obtained by the combination of 'Red' and 'White' and similarly 'Green' is obtained by the combination of 'Blue' and 'Yellow'.

Practice Corner **1.7**

Build your Confidence...

Directions (Q. Nos. 1-15) In each of the following questions, some words are given which are related in some way. The same relationship exists among the words in one of the four alternatives given under it. Find the correct alternatives.

1. Correspondent : News : Newspaper **[RRB (ASM) 2006]**

(a) Road : Vehicle : Destination
(b) Cloud : Water : Ponds
(c) Farmer : Crops : Food
(d) Mason : Cement : Construction

2. Iron : Silver : Gold

(a) Parents : Father : Mother
(b) Wheat : Barley : Cereal
(c) Tree : Brench : Fruit
(d) Deer : Lion : Wolf

3. Road : Bus : Driver

(a) Track : Train : Passenger
(b) Watch : Ship : Diver
(c) Sky : Aeroplane : Pilot
(d) Paper : Letters : Reader

4. Hand : Wrist : Bangle

(a) Neck : Head : Collar
(b) Foot : Ankle : Anklet
(c) Foot : Socks : Toes
(d) Toe : Foot : Knee

5. Music : Guitar : Performer

(a) Trick : Rope : Acrobat
(b) Dance : Tune : Instrument
(c) Food : Recipe : Cook
(d) Patient : Medicine : Doctor

6. Tragedy : Sadness : Tears

(a) Music : Emotion : Tune
(b) Game : Sound : Match
(c) Comedy : Humour : Laughter
(d) Dance : Rhythm : Grace

7. Ink : Pen : Paper

(a) Watch : Dial : Strip
(b) Book : Paper : Words
(c) Farmer : Plough : Field
(d) Colour : Brush : Canvas

8. Class : School : Student

(a) Ball : Bat : Pitch
(b) Sister : Family : Brother
(c) Hand : Body : Finger
(d) Leaf : Tree : Root

9. Bone : Skeleton : Nerve

(a) House : Door : Window
(b) Spoke : Wheel : Handle
(c) Retina : Eye : Pupil
(d) Snow : Cloud : Ice

10. Lion : Cow : Land

(a) Water : Land : Air
(b) Whale : Hippopotamus : Water
(c) Chair : Table : Stool
(d) England : Germany : USA

11. Stump : Cricket : Point

(a) Duce : Dribble : Racket
(b) Diamond : Pitcher : Hit
(c) Dribble : Hockey : Corner
(d) Penalty : Shoot : Boxing

12. Complexion : White : Black

(a) Alert : Intelligent : Babies
(b) Health : Disease : Hospital
(c) Train : Bus : Journey
(d) Officer : Honest : Corrupt

13. Talk : Whisper : Shout

(a) Boredom : Tiredness : Rest
(b) Touch : Hold : Embrace
(c) See : Look : Watch
(d) Create : Form : Make

14. Play : Win : Lose

(a) Accident : Death : Survive
(b) Examination : Success : Determination
(c) Read : Book : Magazine
(d) Music : Dance : Art

15. Clay : Potter : Pots

(a) Doctor : Injection : Pills
(b) Cloth : Tailor : Clothes
(c) Blackboard : Chalk : Teacher
(d) Electricity : Bulb : Light

Response & Interpretations **(1.7)**

1. (c) A 'Correspondent' gathers and formats 'News' for 'Newspaper' and similarly a 'Farmer' grows and reaps 'Crops' for 'Food'.

2. (*d*) All the three belong to the same class. 'Iron', 'Silver' and 'Gold' are all metals and similarly 'Dear', 'Lion' and 'Wolf' are all wild animals.

3. (c) 'Bus' moves on 'Road' and is driven by 'Driver'. Likewise 'Aeroplane' flies in the 'Sky' and is driven by 'Pilot'.

4. (*b*) 'Bangle' is meant for 'Wrist' which is a part of 'Hand'. Similarly, anklet is meant for 'Ankle' which is a part of 'Foot'.

5. (*a*) Music is performed with Guitar by the 'Performer'. Likewise, 'Trick' is performed with 'Rope' by the 'Acrobat'.

6. (c) 'Tragedy' has 'Sadness' and brings 'Tears'. Likewise 'Comedy' has 'Humour' and brings 'Laughter'.

7. (*d*) First is required to work with the second on the third.

8. (c) Third is a part of the first which, in turn, is a part of the second.

9. (c) First and third are both parts of the second.

10. (*b*) 'Lion' and 'Cow' are 'land' animals and similarly 'Whale' and 'Hippopotamus' are 'water' animals.

11. (*c*) 'Stump' and 'Point' are the terms used in 'Cricket' and similarly 'Dribble' and 'Corner' are the terms used in 'Hockey'. Hence, first and last are the terms used in the second.
12. (*d*) As 'Complexion' may be 'White' or 'Black', similarly, 'Officer' can be 'Honest' or 'Corrupt'.
13. (*c*) 'Talk', 'Whisper' and 'Shout' are different terms related with speech. Likewise, 'See', Look' and 'Watch' are the different terms related with glance.
14. (*a*) As 'Win' and 'Lose' are the two outcomes of 'Play', similarly, 'Death' and 'Survival' are the two outcomes of 'Accident'.
15. (*b*) As 'Potter' uses 'Clay' to make 'Pots', similarly, 'Tailor' uses 'Cloth' to make Clothes.

Type 8 Letter Based Analogy

Before discussing such type of relationships in analogy, students are suggested to remember the following things

Forward Letter Positions (Left to Right)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Backward Letter Positions (Right to Left)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Opposite Letters

A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N

Format 1 Forward Order Letter Relationship

In such type of questions, the letters of English alphabet are advanced forward from one letter group to other letter group by a certain rule.

Let us consider the following example

e.g., EFG : HIJ :: PQR : STU

Here, in both the pairs, each letter of the first letter group is replaced by the letter which is 3 positions ahead of that letter in the alphabetical series to obtain the second letter group. Let us see

$$\text{As,}\quad \begin{array}{ccc} 5 & 6 & 7 \\ \text{E} & \text{F} & \text{G} \\ {\scriptstyle +3}\Big\downarrow & {\scriptstyle +3}\Big\downarrow & {\scriptstyle +3}\Big\downarrow \\ \text{H} & \text{I} & \text{J} \\ 8 & 9 & 10 \end{array} \qquad \text{Similarly,}\quad \begin{array}{ccc} 16 & 17 & 18 \\ \text{P} & \text{Q} & \text{R} \\ {\scriptstyle +3}\Big\downarrow & {\scriptstyle +3}\Big\downarrow & {\scriptstyle +3}\Big\downarrow \\ \text{S} & \text{T} & \text{U} \\ 19 & 20 & 21 \end{array}$$

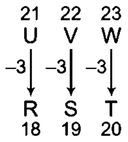
Format 2 Backward Order Letter Relationship

In such type of questions, the letters of English alphabet are descended backward from one letter group to other letter group as per a certain rule.

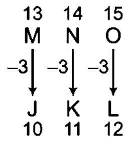
Let us consider the following example

e.g., UVW : RST :: MNO : JKL

Here, in both the pairs, each letter of the first letter group is replaced by the letter which is 3 positions behind of that letter in the alphabetical series to obtain the second letter group. Let us see

As,


21 22 23
U V W
−3 −3 −3
R S T
18 19 20

Similarly,


13 14 15
M N O
−3 −3 −3
J K L
10 11 12

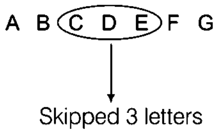
Format 3 Skip Letter Relationship

In such type of questions, the letters of English alphabet are skipped by a certain rule to form the analogy.

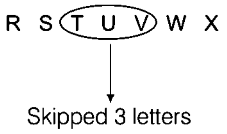
Let us consider the following example

e.g., AB : FG :: RS : WX

Here, 3 letters are skipped between the two letter groups of each pair to form the analogy. Let us see

As,


A B C D E F G
Skipped 3 letters

Similarly,


R S T U V W X
Skipped 3 letters

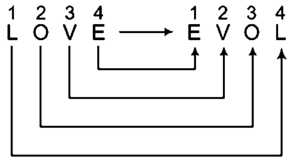
Format 4 Place Change Relationship

In such type of questions, the positions of the letters are interchanged from one letter group to other letter group by following some specified rule or order.

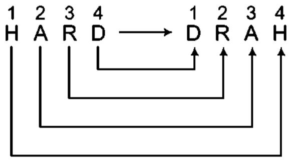
Let us consider the following example

e.g., LOVE : EVOL :: HARD : DRAH

Here, in both the pairs, first letter becomes fourth, second becomes third, third becomes second and fourth becomes the first letter from one letter group to the other letter group. Let us see

As,


1 2 3 4
L O V E
1 2 3 4
E V O L

Similarly,


1 2 3 4
H A R D
1 2 3 4
D R A H

Format 5 Place Change and Order Change Relationship

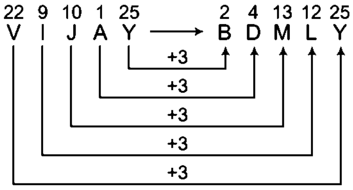
Such type of questions are similar to the previous type but here the words or the letters are also changed using a certain rule to make the analogy.

Let us consider the following example

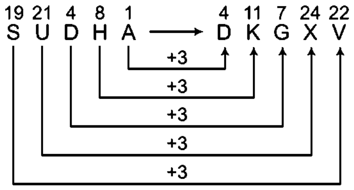
e.g., VIJAY : BDMLY : : SUDHA : DKGXV

Here, in both the pairs, each letter of the first word is replaced by the letter which is 3 positions ahead of that letter in the alphabetical series and also their positions are interchanged from one letter group to other letter group in such a way that the first letter becomes fifth, second becomes fourth, third remains the third, fourth becomes second and fifth becomes the first letter. Let us see

As,



Similarly,



Format 6 Letter-Number Relationship

In such type of questions, the letters of English alphabet are related to numbers using some properties of the letters like sum, product or some other method to form the analogy.

Let us consider the following examples

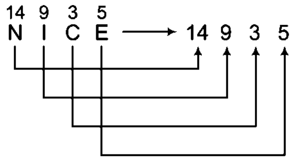
e.g., NAME : 04 : : TRUMPET : 07

Here, 'NAME' has 4 letters and similarly 'Trumpet' has 7.

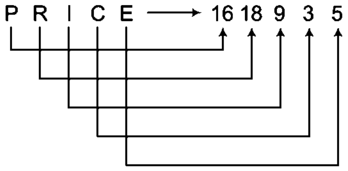
e.g., NICE : 14935 : : PRICE : 1618935

Here, in each pair, every letter has been given its forward order position number. Let us see

As,



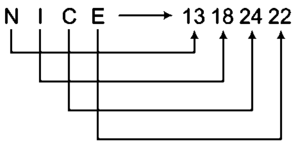
Similarly,



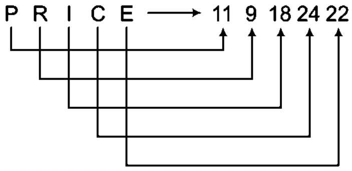
e.g., NICE : 13182422 : : PRICE : 119182422

Here, in each pair, every letter has been given its backward order position number. Let us see

As,



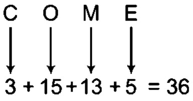
Similarly,



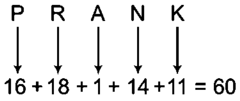
e.g., COME : 36 : : PRANK : 60

Here, in both the pairs, forward order letter positions of letters have been added to establish analogy. Let us see

As,



Similarly,



- Other relations may be established with the positions of letters in backward/forward order using different arithmetical operations like addition, multiplication, subtraction, division, squares, cubes etc.

Format 7 Opposite Letter Relationship

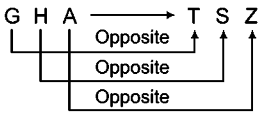
In such type of questions, the analogy is formed using opposite letters in English alphabet.

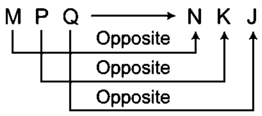
Let us consider the following example

e.g., GHA : TSZ : : MPQ : NKJ

Here, in each pair, each letter of the first letter group is replaced by its opposite letter in English alphabet.

Let us see

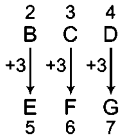
As,

G H A
T S Z
Opposite
Opposite
Opposite

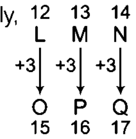
Similarly,

M P Q
N K J
Opposite
Opposite
Opposite

The solved examples given below will give a better idea about the format of the questions asked in various exams

***Ex* 48** BCD : EFG : : LMN : ?

(a) PQO (b) OPQ (c) QPO (d) POQ

Sol. (*b*) As,

2 3 4
B C D
+3 +3 +3
E F G
5 6 7

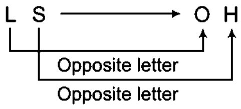
Similarly,

12 13 14
L M N
+3 +3 +3
O P Q
15 16 17

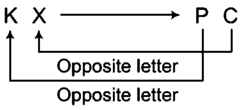
∴ ? = OPQ

***Ex* 49** LS : OH : : ? : PC

(a) PK (b) HP (c) KX (d) XK

Sol. (c) Opposite letter relationship exists here.

As,

L S
O H
Opposite letter
Opposite letter

Similarly,

K X
P C
Opposite letter
Opposite letter

∴ ? = KX

***Ex* 50** PQ is related to 02 in the same way as MNO is related to

(a) 05 (b) 02 (c) 08 (d) 03

Sol. (*d*) PQ is made of 2 letters and similarly, MNO has 3 letters.

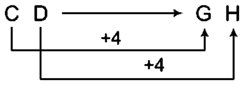
***Ex* 51** M is to N, as B is to

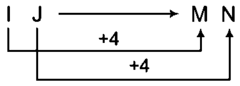
(a) Y (b) C (c) Q (d) A

Sol. (*a*) 'N' is opposite letter of 'M' and similarly 'Y' is the opposite letter of 'B'.

***Ex* 52** CD : GH : : ? : ?

(a) HT : TM (b) IJ : MN (c) MT : HI (d) PK : LM

Sol. (*b*) As,


Similarly,


∴ ? : ? = IJ : MN

***Ex* 53** DRIVEN : NEVIRD : : BEGUM : ? [SSC (10+2) 2013]

(a) MEUBG (b) BGMUE (c) EBGMU (d) MUGEB

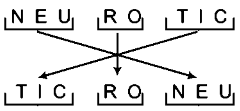
Sol. (*d*) As, DRIVEN → NEVIRD
1 2 3 4 5 6 → 6 5 4 3 2 1

Similarly, BEGUM → MUGEB
1 2 3 4 5 → 5 4 3 2 1

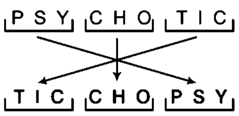
***Ex* 54** NEUROTIC : TICRONEU : : PSYCHOTIC : ? **[IBPS (Clerk) 2013]**

(a) TICCOHPSY (b) TICOCHPSY (c) TICCHOPSY (d) TICHCOPSY
(e) None of these

Sol. (*c*) As,



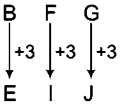
Similarly,



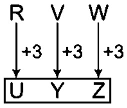
***Ex* 55** BFG : EIJ : : RVW : ? **[SSC (Multitasking) 2014]**

(a) UWY (b) UYZ (c) SWX (d) QUV

Sol. (*b*) As,



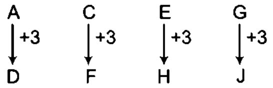
Similarly,



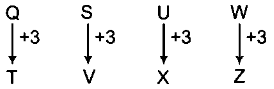
***Ex* 56** ACEG: DFHJ : : QSUW : ? **[IB (ACIO) 2013]**

(a) TVNZ (b) TVZX (c) TVXZ (d) XVTZ

Sol. (*c*) As,



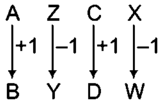
Similarly,



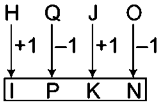
***Ex* 57** AZCX : BYDW : : HQJO : ? **[SSC (10+2) 2013]**

(a) GREP (b) IPKM (c) IPKN (d) GRJP

Sol. (*c*) As,



Similarly,



Practice Corner **1.8**

Build your Confidence...

Directions (Q. Nos. 1-24) In each of the following questions, there is some relationship between the two terms to the left of (: :) and the same relationship holds between the two terms to its right. Also, in each question, one term either to the right of (: :) or to the left of it is missing. This term is given as one of the alternatives given below each question. Find out this term.

1. NO : RS : : TU : ?
(a) XY (b) YX (c) ZY (d) YZ

2. HCM : FAK : : SGD : ?
(a) QEB (b) QIB (c) ESQ (d) GES

3. BCFE : HILK : : NORQ : ? **[RRB (GG) 2011]**
(a) TXWU (b) TXUW (c) TUXW (d) TVWX

4. FILM : ADGH : : MILK : ? **[SSC (CGL) 2013]**
(a) ADGF (b) HDGE (c) HDGF (d) HEGF

5. ABCD : WXYZ : : EFGH : ? **[SSC (CPO) 2010]**
(a) STUV (b) STOU (c) STUE (d) TSUV

6. AB : ZY : : CD : ? **[SSC (CGL) April 2014]**
(a) VU (b) WX (c) UV (d) XW

7. CLOSE : DNRWJ : : OPEN : ?
(a) PRJO (b) RPJB (c) PRHR (d) RZWR

8. EGIK : LJHF : : SUWY : ? **[SSC (10+2) 2011]**
(a) ZXVT (c) TVXZ (c) LNPR (d) MOQS

9. ACEG : IKMO : : PRTV : ? **[RRB (ASM) 2010]**
(a) QRUW (b) JLMP (c) WXAC (d) XZBD

10. acme : mace : : face : ? **[SSC (Steno) 2013]**
(a) cefa (b) cfae (c) cfea (d) afce

11. BJNT : CIOS : : DHPV : ? **[UP B.Ed. 2008]**
(a) EGQU (b) ELQW (c) ELPV (d) EIOU

12. ABCDE : FGHIJ : : PQRST:? **[SSC (Steno) 2013]**
(a) TSRQP (b) UVWXY (c) KLMNO (d) EDCBA

13. AFHO : GBDJ : : CHFM : ? **[SSC (FCI) 2012]**
(a) GBIM (b) GBLD (c) GPLD (d) IDBH

14. QTU : ILM : : BEF : ? **[RRB (TC/CC) 2012]**
(a) PSZ (c) CFH (c) WZA (d) UXB

15. FGEHJ : BCADF : : VWUXZ : ? **[SSC (Steno) 2013]**
(a) NKLMO (b) GFBAC (c) HIJKL (d) OPNQS

16. NEWS : 14, 5, 23, 19 : : PAPER : ? **[SSC (Steno) 2013]**
(a) 16, 5, 16, 1, 18 (b) 18, 5, 16, 1, 16
(c) 16, 1, 16, 5, 18 (d) 32, 2, 32, 10, 36

17. GREAT : 25 :: NUMBER : ? **[SSC (FCI) 2012]**
(a) 36 (b) 38 (c) 27 (d) 24

18. STBP : 1920216 : : MNGO : ?
(a) 1314715 (b) 1413715 (c) 5173141 (d) 3114715

19. XMAE : 16 : : VTNG : ?
(a) 21 (b) 17 (c) 35 (d) 18

20. $P \times Q : 16 \times 17 : : L \times M$: ?
(a) 13×12 (b) 12×13
(c) 16×13 (d) 17×13

21. $\frac{G\times Q}{Q} : 20 \; : : \; \frac{B\times V}{V}$: ?
(a) 25 (b) 27
(c) 20 (d) 17

22. ACE : BDF : : MOQ : ? **[SSC (Multitasking) 2014]**
(a) BMW (b) NQP
(c) NPR (d) BEF

23. SHOE : NCJZ : : REWA : ? **[IBPS (Clerk) 2013]**
(a) WBJF (b) CITY
(c) CAYR (d) MZRV
(e) None of these

24. FLOWER : REWOLF : : FRUITS : ? **[SSC (CGL) 2014]**
(a) STRUIF (b) STUIRF
(c) STIURF (d) STUIFR

Directions (Q. Nos. 25-29) Each of the following questions consists of a pair of letter groups that have a certain relationship to each other, followed by four other pairs of letter groups given as options. The candidates are required to choose the pair in which the letter groups are similarly related as in the given pair.

25. MN : OP
(a) AD : PR (b) CE : TQ (c) QR : ST (d) RS : TV

26. ACB : 06 **[UP B.Ed. 2009]**
(a) PNB : 09 (b) GEF : 18 (c) MNO : 11 (d) TUV : 07

27. MGR : NTI **[UP B.Ed. 2008]**
(a) BCD : EFG (b) JKR : KRP (c) PCR : QRC (d) SPQ : HKJ

28. NURTURE : ERUTRUN
(a) PRANK : KNARP (b) PRANK : NKARP
(c) PRANK : KNPRA (d) PRANK : PNARK

29. JPC : 10163
(a) TQG : 20177 (b) GQT : 20177
(c) TQG : 77102 (d) GOT : 20177

Directions (Q. Nos. 30-36) These questions are based on certain relation. Find out the particular letters which are related to the letters given in questions.

30. 'NQ' is related to 'SV' in the same way as 'DG' is related to **[OBC (Clerk) 2011]**
(a) JM (b) IK (c) IL (d) HK

31. 'AB' is related to 'CD' in the same way as 'YZ' is related to **[IBPS (Clerk) 2011]**
(a) AB (b) AC (c) WX (d) UV
(e) None of these

32. 'WT' is related to 'QN' in the same way as 'FC' is related to **[IBPS (Clerk) 2011]**
(a) KH (b) MJ (c) ZW (d) GK
(e) None of these

33. 'BF' is related to 'IM' in the same way as 'HL' is related to **[UCO Bank (PO) 2010]**
(a) PT (b) NR (c) OR (d) OS
(e) None of these

34. 'MP' is related to 'NQ' in the same way as 'BE' is related to **[UCO Bank (PO) 2009]**
(a) CF (b) DG
(c) CG (d) DF
(e) None of these

35. 'ERID' is related to 'DIRE' in the same way as 'RIPE' is related to **[IBPS (Clerk) 2011]**
(a) EPIR (b) PERI
(c) EPRI (d) PEIR
(e) IPRE

36. 'MORE' is related to 'EORM' in the same way as 'SUIT' is related to **[BOI (Clerk) 2010]**
(a) TIUS (b) IUST
(c) ISTU (d) TUIS
(e) None of these

Response & Interpretations **(1.8)**

1. (*a*) As,
14 15
N O
+4 +4
R S
18 19

Similarly,
20 21
T U
+4 +4
X Y
24 25

∴ ? = XY

2. (*a*) As,
8 3 13 → 6 1 11
H C M → F A K
– 2 – 2 – 2

Similarly,
19 7 4 → 17 5 2
S G D → Q E B
– 2 – 2 – 2

∴ ? = QEB

3. (*c*) As,
2 3 6 5
B C F E
+6 +6 +6 +6
H I L K
8 9 12 11

Similarly,
14 15 18 17
N O R Q
+6 +6 +6 +6
T U X W
20 21 24 23

∴ ? = TUXW

4. (*c*) As,
6 9 12 13
F I L M
–5 –5 –5 –5
A D G H
1 4 7 8

Similarly,
13 9 12 11
M I L K
–5 –5 –5 –5
H D G F
8 4 7 6

∴ ? = HDGF

5. (*a*) As,
A B C D → W X Y Z
Opposite letter
Opposite letter
Opposite letter
Opposite letter

Similarly,
E F G H → S T U V
Opposite letter
Opposite letter
Opposite letter
Opposite letter

∴ ? = STUV

6. (*d*) As opposite letters of AB are ZY, similarly, opposite letters of CD are XW.

7. (*c*) As,
3 12 15 19 5
C L O S E
+1 +2 +3 +4 +5
D N R W J
4 14 18 23 10

Similarly,
15 16 5 14
O P E N
+1 +2 +3 +4
P R H R
16 18 8 18

∴ ? = PRHR

8. (*a*) As,
E G I K → L J H F
+ 1
+ 1
+ 1
+ 1

Similarly,
S U W Y ← Z X V T
+ 1
+ 1
+ 1
+ 1

∴ ? = ZXVT

9. (*d*) As,
1 3 5 7
A C E G
+8 +8 +8 +8
I K M O
9 11 13 15

Similarly,
16 18 20 22
P R T V
+8 +8 +8 +8
X Z B D
24 26 2 4

∴ ? = XZBD

10. (*b*) As, a c m e → m a c e
1 2 3 4 3 1 2 4

Similarly, f a c e → c f a e
1 2 3 4 3 1 2 4

11. (*a*) As,
2 10 14 20
B J N T
+1 –1 +1 –1
C I O S
3 9 15 19

Similarly,
4 8 16 22
D H P V
+1 –1 +1 –1
E G Q U
5 7 17 21

∴ ? = EGQU

12. (*b*) A B C D E : F G H I J : : P Q R S T : $\boxed{\text{U V W X Y}}$

Letters of 'second' part are consecutive of 'first' part.

13. (*d*) As,
A F H O
+ 2 + 2 – 2 – 2
C H F M

Similarly,
G B D J
+ 2 + 2 – 2 – 2
I D B H

∴ ? = IDBH

14. (*c*) As,
Q T U → I L M
+ 3 + 1 + 3 + 1

Similarly,
B E F → W Z A
+ 3 + 1 + 3 + 1

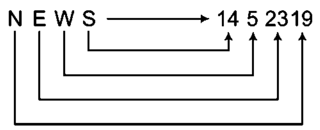
∴ ? = WZA

15. (*d*) As,
F G E H J : B C A D F
+1 – 2 +3 +2 +1 – 2 +3 +2

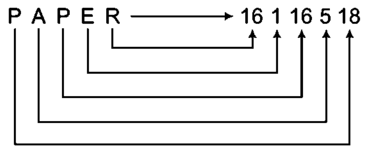
Similarly,
V W U X Z : O P N Q S
+1 – 2 +3 +2 +1 – 2 +3 +2

∴ ? = OPNQS

16. (*c*) As,


N E W S
14 5 23 19

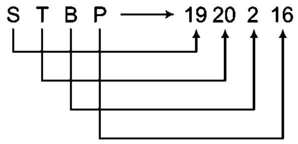
Similarly,


P A P E R
16 1 16 5 18

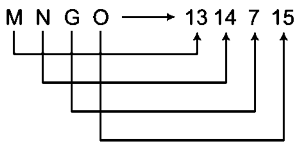
Second part is the position of the letters written in first part.

17. (*a*) As, 'GREAT' has 5 letters, it is represented by square of 5 *i.e.,* 25. Similarly, 'NUMBER' has 6 letters it is represented by square of 6 *i.e.,* 36.

18. (*a*) As,

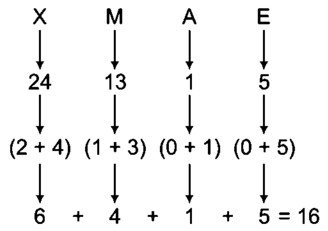

S T B P
19 20 2 16

Similarly,

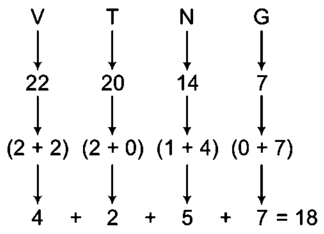

M N G O
13 14 7 15

∴ ? = 1314715

19. (*d*) As,


X M A E
24 13 1 5
(2 + 4) (1 + 3) (0 + 1) (0 + 5)
6 + 4 + 1 + 5 = 16

Similarly,


V T N G
22 20 14 7
(2 + 2) (2 + 0) (1 + 4) (0 + 7)
4 + 2 + 5 + 7 = 18

∴ ? = 18

20. (*b*) In forward order letter sequence,

Position of P = 16, Position of Q = 17

∴ $P \times Q = 16 \times 17$

Similarly, Position of L = 12, Position of M = 13

∴ $L \times M = 12 \times 13$

∴ $? = 12 \times 13$

21. (*a*) In backward order letter sequence,

Position of G = 20

Position of Q = 10

∴ $$\frac{G \times Q}{Q} = \frac{20 \times 10}{10} = 20$$

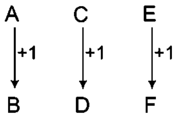
Similarly, Position of B = 25

Position of V = 5

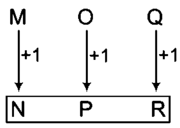
∴ $$\frac{B \times V}{V} = \frac{25 \times 5}{5} = 25$$

∴ ? = 25

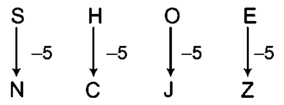
22. (*c*) As,



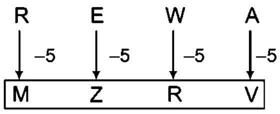
Similarly,



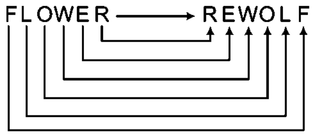
23. (*d*) As,


S H O E
–5 –5 –5 –5
N C J Z

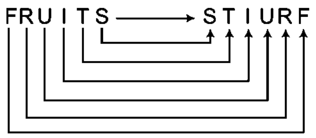
Similarly,


R E W A
–5 –5 –5 –5
M Z R V

24. (*c*) As,

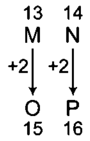

FLOWER
REWOLF

Similarly,

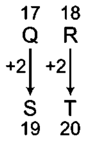

FRUITS
STIURF

As by reversing the letters of the word FLOWER, we get REWOLF, similarly, FRUITS can be written as STIURF.

25. (*c*) As,

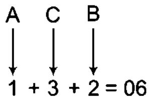

13 14
M N
+2 +2
O P
15 16

Similarly,

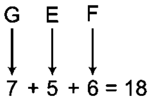

17 18
Q R
+2 +2
S T
19 20

∴ Required answer = QR : ST

26. (*b*) As,

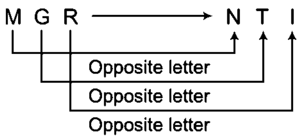


Similarly,

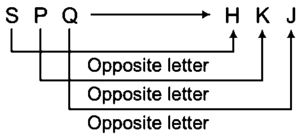


∴ Required answer = GEF : 18

27. (*d*) As,

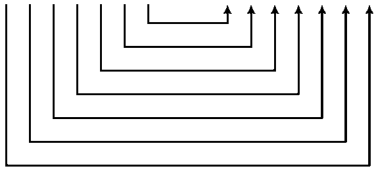

M G R
N T I
Opposite letter
Opposite letter
Opposite letter

Similarly,

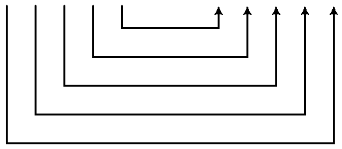

S P Q
H K J
Opposite letter
Opposite letter
Opposite letter

∴ Required answer = SPQ : HKJ

28. (*a*) As, N U R T U R E ⟶ E R U T R U N

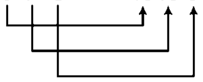


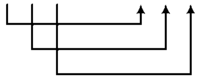
Similarly, P R A N K ⟶ K N A R P



∴ Required answer = PRANK : KNARP

29. (*c*) As, J P C ⟶ 1016 3 Similarly, T Q G ⟶ 2017 7





∴ Required answer = TQG : 20177

30. (*b*) As, N $\xrightarrow{+5}$ S, Q $\xrightarrow{+5}$ V

Similarly, D $\xrightarrow{+5}$ I, G $\xrightarrow{+5}$ L

31. (*a*) As, $\begin{array}{cc} 1 & 2 \\ A & B \\ +2\downarrow & +2\downarrow \\ C & D \\ 3 & 4 \end{array}$ Similarly, $\begin{array}{cc} 25 & 26 \\ Y & Z \\ +2\downarrow & +2\downarrow \\ A & B \\ 1 & 2 \end{array}$

∴ Required answer = AB

32. (*c*) As, $\begin{array}{cc} 23 & 20 \\ W & T \\ -6\downarrow & -6\downarrow \\ Q & N \\ 17 & 14 \end{array}$ Similarly, $\begin{array}{cc} 6 & 3 \\ F & C \\ -6\downarrow & -6\downarrow \\ Z & W \\ 26 & 23 \end{array}$

∴ Required answer = ZW

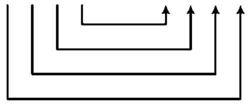
33. (*d*) As, $\begin{array}{cc} 2 & 6 \\ B & F \\ +7\downarrow & +7\downarrow \\ I & M \\ 9 & 13 \end{array}$ Similarly, $\begin{array}{cc} 8 & 12 \\ H & L \\ +7\downarrow & +7\downarrow \\ O & S \\ 15 & 19 \end{array}$

∴ Required answer = OS

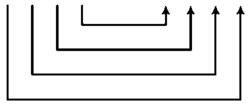
34. (*a*) As, $\begin{array}{cc} 13 & 16 \\ M & P \\ +1\downarrow & +1\downarrow \\ N & Q \\ 14 & 17 \end{array}$ Similarly, $\begin{array}{cc} 2 & 5 \\ B & E \\ +1\downarrow & +1\downarrow \\ C & F \\ 3 & 6 \end{array}$

∴ Required answer = CF

35. (*a*) As, $\overset{1}{E}\,\overset{2}{R}\,\overset{3}{I}\,\overset{4}{D} \longrightarrow \overset{4}{D}\,\overset{3}{I}\,\overset{2}{R}\,\overset{1}{E}$



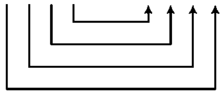
Similarly, $\overset{1}{R}\,\overset{2}{I}\,\overset{3}{P}\,\overset{4}{E} \longrightarrow \overset{4}{E}\,\overset{3}{P}\,\overset{2}{I}\,\overset{1}{R}$



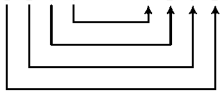
Letters are decoded in reverse order

∴ RIPE → EPIR

36. (*d*) As, $\overset{1}{M}\,\overset{2}{O}\,\overset{3}{R}\,\overset{4}{E} \longrightarrow \overset{4}{E}\,\overset{2}{O}\,\overset{3}{R}\,\overset{1}{M}$



Similarly, $\overset{1}{S}\,\overset{2}{U}\,\overset{3}{I}\,\overset{4}{T} \longrightarrow \overset{4}{T}\,\overset{2}{U}\,\overset{3}{I}\,\overset{1}{S}$



Type 9 Number Based Relationship

Such relationship is based on arithmetical operations like addition, multiplication, subtraction, division of numbers etc. This can be better understood with the formats of the questions as given below

Format 1 Choosing a Number

Choose a number which bears the same relationship with the third/four number as the first two bear.

***Ex* 58** 4 : 8 :: 16 : ?

(a) 28 (b) 18 (c) 20 (d) 32

Sol. (*d*) As, $4 \xrightarrow[\times 2]{} 8$ Similarly, $16 \xrightarrow[\times 2]{} 32$ ∴ ? = 32

***Ex* 59** 386 : 383 : : 517 :? **[SSC (Steno) 2013]**

(a) 514 (b) 571 (c) 715 (d) 512

Sol. (*a*) As, 386 – 3 = 383 Similarly, 517 – 3 = 514

Ex **60** 8 : 56 : : 9 : ? **[SSC (Multitasking) 2014]**

(a) 10 (b) 63 (c) 7 (d) 9

Sol. (*b*) As, $8 \times 7 = 56$ Similarly, $9 \times 7 = 63$

Format 2 Choosing a Similarly Related Pair as the Given Number Pair

Ex **61** 3 : 27

(a) 2 : 8 (b) 3 : 9 (c) 4 : 36 (d) 5 : 120

Sol. (*a*) As, $\underbrace{3 \quad 27}_{\times 3^2}$ Similarly, $\underbrace{2 \quad 8}_{\times 2^2}$

OR

As, $3 : 3^3$ so as $2 : 2^3$

Format 3 Choosing a Number Similar to a Group of Numbers

Ex **62** 45, 54, 63

(a) 32 (b) 55 (c) 18 (d) 64

Sol. (*c*) Digit sum of the given numbers are 9.

Let us see $45 = 4 + 5 = 9$, $54 = 5 + 4 = 9$, $63 = 6 + 3 = 9$

Hence, correct answer will be that alternative whose digit sum is 9 and such alternative is 18 as $(1 + 8 = 9)$.

Format 4 Choosing a Number Set Similar to a Given Number Set

Ex **63** 6, 10, 16

(a) 9, 12, 18 (b) 5, 10, 15 (c) 6, 11, 12 (d) 7, 11, 17

Sol. (*d*) As, $6 \underbrace{\quad}_{+4} 10 \underbrace{\quad}_{+6} 16$ Similarly, $7 \underbrace{\quad}_{+4} 11 \underbrace{\quad}_{+6} 17$

Ex **64** Find out the set among the four sets which is like the given set (13 : 20 : 27). **[SSC (10+2) 2013]**

(a) (3 : 11 : 18) (b) (18 : 25 : 32) (c) (18 : 27 : 72) (d) (7 : 14 : 28)

Sol. (*b*) As, $13 + 7 = 20$ and $20 + 7 = 27$

Similarly, $18 + 7 = 25$ and $25 + 7 = 32$

These are the indicative formats but number based analogy can be established based on several other patterns also.

Practice Corner **1.9**

Build your Confidence...

Directions (Q. Nos. 1-20) In each of the following questions, there is a certain relationship between two given numbers on one side of (: :) and one number is given on another side of (: :) where another number is to be found from the given alternatives, having the same relationship with this number as the numbers of the given pair bear. Choose the best alternative.

1. 4 : 9 : : 8 : ?
(a) 2 (b) 13 (c) 31 (d) 10

2. 1, 2, 4, 7 : 3, 4, 6, 9 : : ? : 2, 3, 5, 8 **[SSC (10+2) 2012]**
(a) 0, 1, 3, 6 (b) 2, 4, 5, 8 (c) 1, 3, 4, 7 (d) 3, 5, 6, 8

3. 17 : 34 : : ? : 10
(a) 11 (b) 8 (c) 5 (d) 15

4. 20 : 11 : : 102 : ? **[RRB (TC/CC) 2004]**
(a) 49 (b) 52 (c) 61 (d) 98

5. 6 : 35: : 7 : ? **[UP B.Ed. 2011]**
(a) 48 (b) 42 (c) 34 (d) 13

6. 14 : 9 : : 26 : ? **[SSC (FCI) 2012]**
(a) 12 (b) 13 (c) 15 (d) 31

7. 100 : 121 : : 144 : ? **[SSC (Multitasking) 2014]**
(a) 160 (b) 93 (c) 169 (d) 426

8. 3 : 27 : : 4 : ? **[SSC (CGL) 2012]**
(a) 16 (b) 64 (c) 32 (d) 28

9. 7544 : 5322 : : 4673 : ?
(a) 2367 (b) 2451 (c) 2531 (d) 4472

10. 63 : 21 : : 27 :? **[SSC (Steno) 2013]**
(a) 6 (b) 9
(c) 1 (d) 3

11. 64 : 144 : : 256 : ? **[SSC (CPO) 2011]**
(a) 16 (b) 32 (c) 400 (d) 336

12. 01 : 36 : : 2 : ? **[SSC (Multitasking) 2012]**
(a) 69 (b) 49 (c) 81 (d) 70

13. 11: 132 : : ? **[SSC (CGL) April 2014]**
(a) 15 : 250 (b) 10 : 100 (c) 9 : 90 (d) 13 : 169

14. 08 : 28 : : 15 : ? **[SSC Constable 2012]**
(a) 63 (b) 65 (c) 126 (d) 124

15. $\frac{1}{9}:\frac{1}{81},\frac{1}{13}:?$ **[SSC (CGL) April 2014]**
(a) $\frac{1}{127}$ (b) $\frac{1}{169}$ (c) $\frac{1}{125}$ (d) $\frac{1}{120}$

16. 25 : 625 :: 35 : ?
(a) 1575 (b) 1205 (c) 875 (d) 635

17. 1234 : 10 : : 6789 : ?
(a) 20 (b) 30 (c) 40 (d) 50

18. 08 : 66 :: ? : 38 **[SSC (10+2) 2013]**
(a) 2 (b) 6 (c) 12 (d) 19

19. 583 : 488 :: 293 : ?
(a) 581 (b) 291 (c) 378 (d) 487

20. 85 : 40 :: 77 : ? **[SSC (10+2) 2013]**
(a) 14 (b) 48 (c) 49 (d) 50

Directions (Q. Nos. 21-24) Each of the following questions consists of a pair of numbers that have a certain relationship to each other, followed by four other pair of numbers given as alternatives. Select the pair in which the numbers are similarly related as in the given pair.

21. 11 : 121
(a) 5 : 115 (b) 6 : 180 (c) 25 : 625 (d) 26 : 188

22. 55 : 10
(a) 15 : 5 (b) 18 : 1 (c) 16 : 75 (d) 88 : 16

23. 14 : 70
(a) 75 : 375 (b) 15 : 90 (c) 80 : 480 (d) 19 : 57

24. 27 : 9
(a) 64 : 8 (b) 125 : 5 (c) 135 : 15 (d) 729 : 81

Directions (Q. Nos. 25-29) In each of the following questions, choose one number which is similar to the numbers in the given set.

25. 525, 813, 714
(a) 353 (b) 329
(c) 606 (d) 520

26. 94, 50, 61
(a) 75 (b) 91
(c) 81 (d) 72

27. 144, 256, 324

(a) 625 (b) 175 (c) 188 (d) 189

28. 29, 37, 43

(a) 45 (b) 80 (c) 40 (d) 47

29. 8, 1331, 4913

(a) 121
(b) 1330
(c) 64
(d) 9

Directions (Q. Nos. 30-36) In each of the following questions, choose that set of numbers from the four alternative sets, which is similar to the given set.

30. (32, 24, 8) **[SSC (CPO) 2005]**

(a) (26, 32, 42) (b) (34, 24, 14) (c) (24, 16, 0) (d) (42, 34, 16)

31. (3, 5, 7)

(a) (2, 3, 5) (b) (11, 15, 16) (c) (29, 41, 43) (d) (4, 7, 9)

32. (12, 20, 28) **[SSC (CPO) 2010]**

(a) (3, 15, 18) (b) (18, 27, 72) (c) (18, 30, 42) (d) (7, 14, 28)

33. (6 : 12 : 18) **[SSC (10+2) 2013]**

(a) (4 : 8 : 14) (b) (12 : 24 : 36) (c) (6 : 20 : 26) (d) (30 : 36 : 42)

34. (2, 14, 16)

(a) (2, 7, 8) (b) (2, 9, 16)
(c) (3, 21, 24) (d) (4, 16, 18)

35. (4268, 8426, 8624)

(a) (3567, 7553, 4642) (b) (6824, 2468, 4862)
(c) (5687, 7691, 2525) (d) (4523, 5223, 4361)

36. (223, 324, 425)

(a) (225, 326, 437) (b) (451, 552, 636)
(c) (554, 655, 756) (d) (623, 723, 823)

Response & Interpretations (1.9)

1. (*b*) As, $\underbrace{4 \quad : \quad 9}_{+5}$ Similarly, $\underbrace{8 \quad : \quad 13}_{+5}$

$\therefore$? = 13

2. (*a*) As, $\begin{array}{cccc} 1 & 2 & 4 & 7 \\ {\scriptstyle +2}\downarrow & {\scriptstyle +2}\downarrow & {\scriptstyle +2}\downarrow & {\scriptstyle +2}\downarrow \\ 3 & 4 & 6 & 9 \end{array}$ Similarly, $\begin{array}{cccc} 0 & 1 & 3 & 6 \\ {\scriptstyle +2}\downarrow & {\scriptstyle +2}\downarrow & {\scriptstyle +2}\downarrow & {\scriptstyle +2}\downarrow \\ 2 & 3 & 5 & 8 \end{array}$

$\therefore$? = 0, 1, 3, 6

3. (*c*) As, $\underbrace{17 \quad : \quad 34}_{\div 2}$ Similarly, $\underbrace{5 \quad : \quad 10}_{\div 2}$

$\therefore$? = 5

4. (*b*) As, $\underbrace{20 \qquad 11}_{\div 2 + 1}$ Similarly, $\underbrace{102 \qquad 52}_{\div 2 + 1}$

$\therefore$? = 52

5. (*a*) As, $\underbrace{6 \quad : \quad 35}_{(6-1)(6+1)}$ Similarly, $\underbrace{7 \quad : \quad 48}_{(7-1)(7+1)}$

$\therefore$? = 48

6. (*c*) As, $(9 \times 2) = 18$ and $(18 - 4) = 14$

Similarly, $(15 \times 2) = 30$ and $(30 - 4) = 26$ $\therefore$? = 15

7. (*c*) As, 100: 121 or $10^2 : 11^2$

144 : 169 $\Rightarrow$ $12^2 : 13^2$

8. (*b*) As, cube of 3 is 27.

Similarly, cube of 4 is 64.

9. (*b*) As, $\underbrace{7544 \quad : \quad 5322}_{-2222}$ Similarly, $\underbrace{4673 \quad : \quad 2451}_{-2222}$

$\therefore$? = 2451

10. (*b*) As, $63 \div 3 = 21$

Similarly, $27 \div 3 = 9$

11. (*c*) As, $8^2 = 64$

and $(8 + 4)^2 = 12^2 = 144$

Similarly, $16^2 = 256$

and $(16 + 4)^2 = 20^2 = \boxed{400}$

$\therefore$? = 400

12. (*b*) According to the statement,

1 : 36 : : 2 : ?

Here, $(1 + 5)^2 = 36$

Similarly, $(2 + 5)^2 = 49$

$\therefore$? = 49

13. (*c*) As, $11 \times (11 + 1) = 11 \times 12 = 132$

Similarly, $9 \times (9+1) = 9 \times 10 = 90$

14. (*b*)

As, $08 \times 02 = 16$ and $16 = 2 \times 8 = 28$

Similarly, $15 \times 02 = 30$ and $30 = 6 \times 5 = 65$

$\therefore$? = 65

15. (*b*) As, $\left(\frac{1}{9}\right)^2 = \frac{1}{81}$

Similarly, $\left(\frac{1}{13}\right)^2 = \frac{1}{169}$

16. (*d*) As, 25 : 625 → 25 is common in both and 6 is added before it.

Similarly, 35 : $\boxed{635}$ → 35 is common in both and 6 is added before it.

17. (*b*) As, 1234 : 10

$1 + 2 + 3 + 4 = 10$

Similarly, 6789 : 30

$6 + 7 + 8 + 9 = 30$

18. (*b*) As, $66 - 2 = 64 \rightarrow \sqrt{64} = 8$

Similarly, $38 - 2 = 36 \rightarrow \sqrt{36} = 6$

19. (*c*) Taking option (c),

As sum of digits of 583 = $5 + 8 + 3 = 16$

and sum of digits of 488 = $4 + 8 + 8 = 20$

Similarly, sum of digits of $293 = 2 + 9 + 3 = 14$

and Sum of digits of $\boxed{378} = 3 + 7 + 8 = 18$

Here, difference of both are $(20 - 16) = (18 - 14) = 4$

$\therefore\ ? = 378$

20. (*c*) As, $85 \xrightarrow{8\times5} \boxed{40}$ Similarly, $77 \xrightarrow{7\times7} \boxed{49}$

21. (*c*) Second is the square of the first number.

As, $11^2 = 121$

Similarly, $25^2 = 625$

22. (*d*) Second number is the digit sum of the 1st number.

As, $5 + 5 = 10$

Similarly, $8 + 8 = 16$

23. (*a*) First number is multiplied by 5 to get second number.

As, $14 \times 5 = 70$

Similarly, $75 \times 5 = 375$

24. (*d*) The relationship is $a^3 : a^2$.

As,

$$\begin{array}{ccc} 27 & : & 9 \\ \downarrow & & \downarrow \\ 3^3 & & 3^2 \end{array} \quad \text{Similarly,} \quad \begin{array}{ccc} 729 & : & 81 \\ \downarrow & & \downarrow \\ 9^3 & & 9^2 \end{array}$$

25. (*c*) As, $5 + 2 + 5 = 12$

$8 + 1 + 3 = 12$

$7 + 1 + 4 = 12$

Similarly, $6 + 0 + 6 = 12$

26. (*d*) The difference between the 1st and 2nd digit of the numbers is 5.

27. (*a*) The numbers are perfect square.

Let us see

As, $144 = 12^2, 256 = 16^2, 324 = 18^2$

Similarly, $625 = 25^2$

28. (*d*) All are prime numbers.

29. (*c*) All the numbers are perfect cubes.

Let us see

As, $8 = 2^3$

$1331 = 11^3$

$4913 = 17^3$

Similarly, $64 = 4^3$

30. (*c*) Here, $32 \xrightarrow{-8} 24 \xrightarrow{-16} 8$

Similarly, $24 \xrightarrow{-8} 16 \xrightarrow{-16} 0$

31. (*c*) Set of consecutive odd prime numbers.

32. (*c*) In (12, 20, 28), every next number is obtained by adding 8 with the previous number and similarly, in (18, 30, 42), every next number is obtained by adding 12 with the previous number.

33. (*b*) As, $6 \xrightarrow{+6} 12 \xrightarrow{+6} 18$

Similarly, $12 \xrightarrow{+12} 24 \xrightarrow{+12} 36$

34. (*c*) In each set

2nd number = 1st number × 7

and 3rd number = 1st number × 8

Let us see

As, $14 = 2 \times 7$

and $16 = 2 \times 8$

Similarly, $21 = 3 \times 7$

and $24 = 3 \times 8$

35. (*b*) Each set is made of the digits 2, 4, 6, 8.

36. (*c*) In each set,

2nd number = 1st number + 101

3rd number = 2nd number + 101

Let us see

As, $223 + 101 = 324$

and $324 + 101 = 425$

Similarly, $554 + 101 = 655$

and $655 + 101 = 756$

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-12) In each of the following questions, choose the missing word in place of question mark (?) on the basis of the relationship between the words given on the left/right hand side of the sign of analogy.

1. Menu : Food : : Catalogue : ?
(a) Rack (b) Newspaper (c) Library (d) Books

2. Goat : Bleat : : Camel : ?
(a) Bleat (b) Howl (c) Bray (d) Grunt

3. Adult : Baby : : Flower : ?
(a) Seed (b) Bud
(c) Fruit (d) Butterfly

4. Good : Bad : : Virtue : ?
(a) Blame (b) Sin (c) Despair (d) Vice

5. Bird : Fly : : Snake : ?
(a) Timid (b) Clatter (c) Crawl (d) Hole

6. BEAK : ORNX : : FILM : ? **[SSC (CPO) 2013]**
(a) RUXY (b) MLIF (c) SVYZ (d) URON

7. Taka : Bangladesh : : Lira : ?
(a) Kuwait (b) Italy (c) Sri Lanka (d) Kenya

8. Doctor : Nurse : : ? : Follower
(a) Worker (b) Employer (c) Union (d) Leader

9. Food : Stomach : : Fuel : ?
(a) Engine (b) Automobile
(c) Rail (d) Aeroplane

10. Water : Sand : : Ocean : ?
(a) Engine (b) River (c) Desert (d) Waves

11. Botany : Plants : : Entomology : ?
(a) Germs (b) Insects (c) Reptiles (d) Rodents

12. Radio : Listener : : Film : ? **[SSC (CPO) 2003]**
(a) Producer (b) Actor (c) Viewer (d) Director

13. 'Bank' is related to 'Money' in the same way as 'Transport' is related to
(a) Goods (b) Road
(c) Movement (d) Traffic

14. 'Fan' is related to 'Wings' in the same way as 'Wheel' is related to
(a) Round (b) Cars (c) Spokes (d) Moves

15. 'Captain' is related to 'Soldier' in the same way as 'Leader' is related to
(a) Chair (b) Follower (c) Party (d) Minister

16. 'Skirmish' is related to 'War' in the same way as 'Disease' is related to
(a) Infection (b) Epidemic
(c) Patient (d) Medicine

17. 'Tree' is related to 'Root' in the same way as 'Smoke' is related to
(a) Cigarette (b) Fire
(c) Heat (d) Chimney

18. 'Good' is related to 'Bad' in the same way as 'Roof' is related to
(a) Wall (b) Pillar (c) Terrace (d) Floor

19. 'Oval' is related to 'Circle' in the same way as 'Rectangle' is related to
(a) Triangle (b) Square
(c) Periphery (d) Diagonal

20. 'Umpire' is related to 'Match' in the same way as 'Judge' is related to
(a) Bar council (b) Lawyer
(c) Judgement (d) Lawsuit

21. 'Thick' is related to 'Thin' in the same way as 'Idle' is related to
(a) Virtuous (b) Business
(c) Industrious (d) Activity

22. 'Needle' is related to 'Thread' in the same way as 'Pen' is related to **[IBPS (PO) 2012]**
(a) Ink (b) Cap
(c) Paper (d) Word
(e) Stationery

Directions (Q. Nos. 23-30) The following questions consist of two words having a certain relationship to each other. Select the alternative whose words are having the same relationship amongst them.

23. Umpire : Game **[SSC (CGL) 2013]**

(a) Prodigy : Wonder (b) Chef : Banquet
(c) Legislator : Election (d) Moderator : Debate

24. Confession : Testimony

(a) Crime : Petition
(b) Autobiography : Biography
(c) Edition : Correction
(d) Witness : Judgement

25. Studious : Erudite

(a) Enterprising : Rich (b) Cupidity : Poor
(c) Virtuous : Judge (d) Ignorance : Illiterate

26. Action : Reaction **[CLAT 2013]**

(a) Introvert : Extrovert (b) Assail : Defend
(c) Diseased : Treatment (d) Death : Rebirth

27. Triangle : Hexagon **[MAT 2013]**

(a) Cone : Sphere (b) Rectangle : Octagon
(c) Pentagon : Heptagon (d) Angle : Quadrilateral

28. Stare : Glance **[MAT 2014]**

(a) Gulp : Sip (b) Confide : Tell
(c) Hunt : Stalk (d) Step : Walk

29. Cloth : Texture **[MAT 2014]**

(a) Body : Weight (b) Silk : Cloth
(c) Wood : Grains (d) Ornaments : Gold

30. Nuts : Bolts **[CLAT 2013]**

(a) Nitty : Gritty
(b) Bare : Feet
(c) Naked : Clothes
(d) Hard : Soft

Directions (Q. Nos. 31-40) From the four given alternatives, select that word, which best completes the analogy (?) that exists among the three words.

31. King : Royal : : ? : Religious

(a) Prayer (b) Saint
(c) Priesthood (d) Holy book

32. Hill : Mountain : : ? : Pain

(a) Distress (b) Discomfort
(c) Headache (d) Fear

33. ? : ALKLO : : WOULD : TLRIA **[SSC (CPO) 2013]**

(a) DONOR (b) CONES (c) BARGE (d) BLOCK

34. ? : DURXQG : : POLICE : SROLFH

(a) AROUND (b) SHOULD
(c) ARMOUR (d) GROUND

35. Head : Hair : : Hand : ? **[SSC (CPO) 2013]**

(a) Finger (b) Ear (c) Neck (d) Knee

36. Walking : Running : : Wind : ? **[SSC (CPO) 2013]**

(a) Weather (b) Air (c) Rain (d) Storm

37. King : Throne : : Rider : ? **[SSC (CGL) 2013]**

(a) Chair (b) Horse (c) Seat (d) Saddle

38. FILM : ADGH : : MILK : ? **[SSC (CGL) 2013]**

(a) HEGF (b) ADGF (c) HDGE (d) HDGF

39. HCM : FAK : : SGD : ? **[SSC (CGL) 2013]**

(a) QEB (b) QIB (c) ESQ (d) GES

40. Choose the option that expresses the same relationship as the word Tobacco : Cancer, has **[CG PSC 2013]**

(a) Milk : Food (b) Bud : Flower
(c) Soil : Erosion (d) Mosquito : Malaria

Directions (Q. Nos. 41-45) Select the related word/letter/ number from the given alternatives.

41. West : North-East : : South : ? **[SSC (CPO) 2005]**

(a) North-West (b) South-East
(c) North (d) East

42. KNQT : LORU : : ADGJ : ? **[SSC (10+2) 2013]**

(a) BEHK
(b) FHLO
(c) DGEF
(d) MPVW

43. QPRS : TUWV : : JIKL : ?

(a) NMOP (b) NMPO (c) MNPO (d) MNOP

44. 42 : 56 : : 110 : ? **[NIFT (UG) 2008]**

(a) 132 (b) 136 (c) 124 (d) 148

45. 5 : 100, 4 : 64 : : 4 : 80, 3 : ?

(a) 26 (b) 48 (c) 60 (d) 54

Directions (Q. Nos. 46-56) In each of the following questions, there is a certain relationship between two given numbers/ group of letters on one side of (: :) and one number/groups of letters is given on another side of (: :) while another number/ group of letters is to be found from given options, having the same relationship with this number/group of letters as the numbers/groups of letters of the given pair bear. Choose the best option.

46. WRITE : JEVGR : : WRONG : ? **[RRB (ASM) 2010]**
(a) JEBAT (b) JECA (c) JEDAT (d) JEDAD

47. TNGP : 2014716 : : LPDT : ?
(a) 2041612 (b) 1216204
(c) 2116420 (d) 1216420

48. PST : 01 : : NPR : ?
(a) 3 (b) 4 (c) 1 (d) 7

49. 212 : 436 : : 560 : ? **[RRB (ASM) 2007]**
(a) 786 (b) 682 (c) 784 (d) 688

50. 63 : 9 : : ? : 14 **[RRB (AL) 2011]**
(a) 68 (b) 42 (c) 96 (d) 56

51. 432 : 24 : : 735 : ?
(a) 105 (b) 25 (c) 73 (d) 81

52. DARE : ADER : : REEK : ? **[RRB (CGL) 2012]**
(a) EEKR (b) EKER (c) ERKE (d) EERK

53. Silkworm : Silk : : Snake : ? **[RRB (CGL) 2012]**
(a) Poisonless (b) Poison
(c) Death (d) Fear

54. L × M : 12 × 13 : : U × W : ? **[RRB (CGL) 2012]**
(a) 21×31 (b) 21×22
(c) 21×23 (d) 21×25

55. a : One : : f : ? **[RRB (CGL) 2012]**
(a) Property (b) Fail
(c) E (d) Six

56. CEGI : RTVX : : IKMO : ? **[RRB (CGL) 2012]**
(a) JKNP (b) MNQP
(c) LNPR (d) DFHI

Directions (Q. Nos. 57-58) The pair of words in capitals is followed by four pairs of related words/phrases, which best expresses a relationship similar to that expressed in the original pair. **[FMS 2010]**

57. Stygian : Dark
(a) Abysmal : Low (b) Cogent : Contentious
(c) Fortuitous : Accidental (d) Cataclysmic : Doomed

58. Contiguous : Abut
(a) Possible : Occur (b) Synthetic : Create
(c) Simultaneous : Coincide (d) Constant : Stabilise

Directions (Q. Nos. 59-62) In each of the following questions, choose that set of numbers from the four alternative sets, which is similar to the given set.

59. (15, 27, 39)
(a) (75, 27, 81) (b) (105, 125, 145)
(c) (77, 78, 85) (d) (57, 35, 65)

60. (49, 81, 25)
(a) (25, 45, 27) (b) (22, 37, 41)
(c) (17, 12, 9) (d) (100, 289, 4)

61. (12, 5, 7)
(a) (7, 4, 3) (b) (8, 12, 16)
(c) (9, 18, 22) (d) (5, 12, 16)

62. (23 : 30 : 37) **[SSC (10 + 2) 2013]**
(a) (6 : 13 : 20) (b) (7 : 15 : 22)
(c) (21 : 28 : 34) (d) (12 : 19 : 25)

Directions (Q. Nos. 63-67) For each of the following questions select the answer pair that expresses a relationship most similar to that expressed in the given pair.

63. Omniscient : Knowledge **[IIFT 2010]**
(a) Saturnine : Energy
(b) Boundless : Expanse
(c) Inquisitive : Science
(d) Complete : Retraction

64. Nebulous : Form **[IIFT 2010]**
(a) Insincere : Misanthrope
(b) Benevolent : Excellence
(c) Insipid : Taste
(d) Composed : Innocence

65. Errors : Inexperience **[NIFT (UG) 2012]**
(a) Skill : Mistake (b) Training : Economy
(c) Losses : Carelessness (d) News : Publication

66. Brain : Neurology **[NIIT (UG) 2012]**
(a) Biology : Animals (b) Hydrology : Water
(c) Body : Physiology (d) Entomology : Plants

67. Duck : Quack **[NIFT (UG) 2012]**
(a) Dog : Growl (b) Sparrow : Peck
(c) Snake : Creep (d) Camel : Desert

Directions (Q. Nos. 68-71) In the following questions, select the related word/letters/number from the given alternatives. **[SSC (10+2) 2013]**

68. **Picture : See : : Book : ?**

(a) Buy (b) Read
(c) Listen (d) Library

69. **Dark : Light : : Hot : ?**

(a) Contaminated (b) Accrued
(c) Diseased (d) Cold

70. **Swimming : River : : Hiking : ?**

(a) Road (b) Pond
(c) Mountain (d) Sea

71. **HOPEFUL : LUFEPOH : : ETHNICITY : ?**

(a) YTICINHTE (b) TICINHTEY
(c) ICINHTEYT (d) CINHTEYTI

Directions (Q.Nos. 72-75) In each of the following questions, two words are paired which a have a certain relation. Select a correct option to substitute question mark, so as to make a similar relational pair with the word given after double colon (: :). **[CMAT 2011]**

72. **Right : duty : : Power : ?**

(a) Wrong (b) Weak
(c) Powerless (d) Liability

73. **Elephant : Calf : : Tiger : ?**

(a) Pup (b) Tigress
(c) Cub (d) Baby Tiger

74. **Patient : Doctor : : Litigant : ?**

(a) Advisor (b) Help (c) Legal aid (d) Lawyer

75. **World War II : United Nations : : World War I : ?**

(a) Treaty of Versailles
(b) International Commission of Jurists
(c) League of Nations
(d) International Court of Justice

Directions (Q. Nos. 76-82) In the following questions, select the related word/letters/number from the given alternative.

76. **841 : 29 : : 289 : ?** **[SSC (CPO) 2013]**

(a) 23 (b) 21 (c) 17 (d) 13

77. **8 : 28 : : 27 : ?** **[SSC (CPO) 2013]**

(a) 85 (b) 28 (c) 8 (d) 64

78. **Tanning : Leather : : Pyrotechnics : ?** **[SSC (CGL) 2013]**

(a) Bombs
(b) Fireworks
(c) Wool
(d) Machinery

79. **F : 216 : : L : ?** **[SSC (CGL) 2013]**

(a) 1728 (b) 1700 (c) 1600 (d) 1723

80. **MOUSE : KPSTC : : LIGHT : ?** **[SSC (CGL) 2013]**

(a) MGHFU (b) JGEFR (c) JJEIR (d) MJHIU

81. **584 : 488 : : 294 : ?** **[SSC (CGL) 2013]**

(a) 581 (b) 291 (c) 378 (d) 487

82. **AHOP : CKSU : : BJMF : ?** **[SSC (CGL) 2013]**

(a) EZUQ (b) DMQK (c) DQKM (d) CJWM

Directions (Q. Nos. 83-85) Indicate the answer choice to the question mark(?).

83. **EDUCATION : NOITACUDE :: INTELLIGENCE : ?** **[SSC (10+2) 2013]**

(a) ECENGILLTEIN (b) ECNGEILLTENI
(c) ECNEGILLETNI (d) ECNEGILLTENI

84. **BUCKET : ACTVBDJLDFSU : : BONUS : ?**

(a) ACMNMOTVRT (b) SUNOB
(c) ACNPMOTVRT (d) ACMNMOTURT

85. **Australia : Continent** **[UP PSC 2013]**

(a) Engine : Train
(b) River : Coast
(c) Vikrant : Ship
(d) Yuri Gagarin : Space

Directions (Q. Nos. 86-87) Choose the option that best completes the relationship indicated in capitalized pair. **[JMET 2011]**

86. **CRITICISE : FULMINATE**

(a) Tense : Assuage
(b) Flail : Control
(c) Hurt : Torture
(d) Land : Prevaricate

87. **POETRY : BALLAD**

(a) Reptile : Snake (b) Bulb : Tube light
(c) Snake : Reptile (d) Life : Death

88. **5 : 35** **[MAT 2006]**

(a) 7 : 77 (b) 9 : 45 (c) 11 : 55 (d) 3 : 24

Directions (Q. Nos. 89-93) In each of the following questions, a related pairs of words is linked by a colon, followed by four pair of words. Choose the pair, which is most like the relationship expressed in the original pair in capital letters. **[FMS 2006]**

89. **Impecunious : Mendicant**

(a) Prodigal : Philanthropist (b) Petulant : Complainer
(c) Quizzical : Critic (d) Compulsive : Liar

90. **Error : Infallible**

(a) Emotion : Invulnerable (b) Defect : Intolerable
(c) Flaw : Impeccable (d) Cure : Irreversible

91. **Tears : Lachrymose**

(a) Words : Verbose (b) Speeches : Morose
(c) Jests : Ironic (d) Requests : Effusive

92. **Authenticity : Apocryphal**

(a) Wickedness : Nefarious (b) Artifice : Deceptive
(c) Assertiveness : Dogmatic (d) Integrity : Hypocritical

93. **Servility : Grovel**

(a) Arrogance : Titter (b) Modesty : Preen
(c) Hypocrisy : Snivel (d) Anger : Fume

94. **41537 is related to 4 in the same way as 421 is related to**

(a) 50 (b) 137 (c) 2 (d) 49

95. **12 : 30 : : 18 : ?** **[SSC (10+2) 2013]**

(a) 36 (b) 42 (c) 44 (d) 45

96. **A : Transaction : : Language : B** **[Hotel Mgmt 2010]**

(a) A. Agreement, B. Communication
(b) A. Business, B. Media
(c) A. Money, B. Conversation
(d) A. Contract, B. Scholar

97. **A : Inert : : Active : B** **[Hotel Mgmt 2007]**

(a) A. Statics, B. Gymnast
(b) A. Helium, B. Participation
(c) A. Air, B. Smart
(d) A. Static, B. Dynamic

98. **A : Gum : : Worm : B** **[Hotel Mgmt 2008]**

(a) A. Tree, B. Silk (b) A. Loaf, B. Tread
(c) A. Bottle, B. Insect (d) A. Brand, B. Cocoon

99. **Lightning : A : : B : Sky** **[Hotel Mgmt 2009]**

(a) A. Rain, B. Thunder (b) A. Rainbow, B. Wind
(c) A. Cloud, B. Rainbow (d) A. Sky, B. Rain

100. **A : Ocean : : Stone : B** **[Hotel Mgmt 2011]**

(a) A. Glacier, B. Granite
(b) A. River, B. Pebble
(c) A. Lake, B. Rock
(d) A. Continent, B. Mountain

Directions (Q. Nos. 101-104) Select the option which is having similar analogy vis-a-vis the analogy given in the question.

101. **Communication : Message : :** **[IIFT 2008]**

(a) Humor : Delight (b) Expression : Words
(c) Clarification : Doubt (d) Emission : Cosmic

102. **Activate : Detonate : :** **[IIFT 2008]**

(a) Deaden : Defuse (b) Expression : Words
(c) Connect : Detach (d) Inform : Deform

103. **If 'Asinine' is for 'Donkey', then** **[FMS 2010]**

(a) 'Vulpine' is for 'fox' (b) Vulpine is for 'Vulture'
(c) 'Avian' is for cow (d) 'Avian' is for 'Dove'

104. **If 'Stallion' is for 'More', than** **[FMS 2010]**

(a) 'Ewe' is for 'Ram' (b) 'Ram' is for 'Ewe'
(c) 'Goose' is for 'Gander' (d) 'Sow' is for 'Bear'

Directions (Q. Nos. 105-108) In the following questions their words are given, first two words bear a certain relationship between them, based on that find a word from the option that will bear the same relation with the third word.

105. **Mycology : Fungi : : Pedology : ?** **[MAT 2008]**

(a) Moon (b) Kidney
(c) Child (d) Soil

106. **Alleviate : Aggravate : : Elastic : ?** **[IIFT 2013]**

(a) Rigid (b) Flexible (c) Malleable (d) Strong

107. **Stag : Fawn : : Cockroach : ?** **[MAT 2005]**

(a) Nymph (b) Cub (c) Larva (d) Colt

108. **Benevolent : Kind : : Unclear :** **[IIFT 2013]**

(a) Bright (b) Thick
(c) Luminous (d) Muddy

Directions (Q. Nos. 109-121) A pair of word is given in each question bearing a certain relationship. Based on that find the pair from options that will bear the same relationship.

109. Russia : Moscow [MAT 2006]
(a) India : Mumbai
(b) Norway : Oslo
(c) China : Shanghai
(d) Pakistan : Faislabad

110. Error : Mistake
(a) Connection : Retaliation
(b) Literature : Poetry
(c) Music : Art
(d) Doubt : Suspicion

111. Ass : Bray [MAT 2006]
(a) Flies : Squeak
(b) Hen : Mew
(c) Fox : Snout
(d) Sheep : Bleat

112. Cigarette : Tobacco [MAT 2005]
(a) Coffee : Caffeine
(b) Milk : Bottle
(c) Cigar : Filter
(d) Shoes : Socks

113. Traveller : Destination [MAT 2013]
(a) Beggar : Donation
(b) Accident : Hospital
(c) Teacher : Education
(d) Refugee : Shelter

114. Apostate : Religion [MAT 2005]
(a) Teacher : Education
(b) Traitor : Country
(c) Potentate : Kingdom
(d) Jailer : Law

115. Light : Glint [MAT 2006]
(a) Tide : Wave
(b) Scent : Whiff
(c) Colour : Shade
(d) Sound : Blare

116. Racism : Apartheid [MAT 2007]
(a) Sexism : Chauvinism
(b) Parochialism : Linguism
(c) Nationalism : Identity
(d) Communalism : Religion

117. Patriotism : Citizens [MAT 2013]
(a) Morality : Truthfulness
(b) Character: Values
(c) Concentration : Students
(d) Homage : Martyrs

118. Surgeon : Scalpel
(a) Musician : Instrument
(b) Carpenter : Cabinet
(c) Sculptor : Chisel
(d) Baker : Oven

119. Horns : Bull [MAT 2006]
(a) Mane : Lion
(b) Wattles : Turkey
(c) Hoofs : Horse
(d) Antlers : Stag

120. Spider : Web [MAT 2014]
(a) Ink : Pen
(b) Cock : Hen
(c) Teacher: Student
(d) Poet : Poetry

121. Jew : Synagogue [MAT 2014]
(a) Parsis : Temple
(b) Jains : Fire Temple
(c) Buddhists : Pagoda
(d) Hindus : Vedas

122. 'Steel' is related to 'Alloy' in the same way as 'Zinc' is related to [MAT 2005]
(a) Non-metal
(b) Halogen
(c) Alloy
(d) None of these

Directions (Q. Nos. 123-132) Each question has four analogies from a to d. Mark all correct analogies.

123. (a) Murrey : Black : : Magenta : Red [IIFT 2006]
(b) Inter : Exhume : : Piebald : Homogenous
(c) Effete : Fructuous : : Chapfallen : Effervescent
(d) Selenology : Moon : : Epistemology : Knowledge

124. (a) Polyglot : Languages : : Polyphagous : Food
(b) Escutcheon : Scutcheon : : Fabulist : Liar
(c) Scurvy : Vitamin C : : Kwashiorkor : Protein
(d) Apothecary : Drugs : : Cruciverbalist : Crosswords

125. $\frac{M}{AC} : \frac{N}{AD} : : \frac{O}{AE} : ?$ [MAT 2009]
(a) $\frac{P}{AF}$
(b) $\frac{Q}{AB}$
(c) $\frac{P}{AC}$
(d) $\frac{R}{AD}$

126. If IQS : LNV, then JRM : ? [IIFT 2012]
(a) OKS
(b) MOP
(c) NIP
(d) MOQ

127. 24 : 126 : : 48 : ? [MAT 2011]
(a) 433
(b) 192
(c) 240
(d) 344

128. (32, 24, 8) [MAT 2005]
(a) (26, 32, 42)
(b) (34, 24, 14)
(c) (24, 16, 8)
(d) (42, 34, 16)

129. (81, 77, 69) [MAT 2005]
(a) (56, 52, 44)
(b) (64, 61, 53)
(c) (75, 71, 60)
(d) (92, 88, 79)

130. Valueless : Invaluable [MAT 2013]
(a) Costly : Cut-rate
(b) Miserly : Philanthropic
(c) Frugality : Wealth
(d) Thriftiness : Cheap

131. Thrust : Spear [MAT 2014]
(a) cabbard : Sword
(b) Mangle : Iron
(c) Bow : Arrow
(d) Fence : Epee

132. Money : Transaction [MAT 2014]
(a) Life : Death
(b) Water : Drink
(c) Ideas : Exchange
(d) Language : Conversation

Directions (Q. Nos. 133-136) Each of these questions, consists of a pair of words bearing a certain relationship. From amongst the alternative, pick up the pair that best illustrates a similar relationship. **[MAT 2013]**

133. Sunrise : Sunset

(a) Dawn : Twilight
(b) Noon : Midnight
(c) Morning : Night
(d) Energetic : Lazy

134. River : Ocean

(a) Child : School
(b) Book : Library
(c) Lane : Road
(d) Cloth : Body

135. Glove : Hand

(a) Neck : Collar
(b) Tie : Shirt
(c) Socks : Feet
(d) Coat : Pocket

136. Sound : Muffled

(a) Moisture : Humid
(b) Colour : Faded
(c) Despair : Anger
(d) Odour : Pungent

137. ACAZX : DFDWU : : GIGTR : ? **[MAT 2005]**

(a) JKIQO
(b) JLJQO
(c) JKJOQ
(d) JLJOP

138. 123 : 13^2 : : 235 : ? **[MAT 2010]**

(a) 23^3
(b) 25^3
(c) 35^2
(d) 25^2

139. LOM : NMK : : PKI : ? **[NIFT (UG) 2014]**

(a) RIH
(b) SHG
(c) RIG
(d) RHG

140. 'Carnivorous is related to 'Panther' in the same way as 'Herbivorous' is related to **[MAT 2008]**

(a) Tiger
(b) Lion
(c) Leopard
(d) Buffalo

141. ABCD is related to OPQR in the same way as WXYZ is related to **[MAT 2008]**

(a) EFGH
(b) STUV
(c) KLMN
(d) QRST

Directions (Q. Nos. 142-145) In each of the following questions there are two blanks marked I and II. The words to fill in these blanks are given against I as (A,B,C,D) and II as (P,Q,R,S) respectively. The right words to fill in these blanks are given as four alternatives. The words on either side of the sign (: :) have a similar relationship. The alternative which signifies this relationship is your answer. **[SNAP 2012, 2010, 2009]**

142. I : Increase : : Descend : II

I. (A) Grow (B) Ascend
(C) RISE (D) Price
II. (P) Reduce (Q) Down
(R) Decrease (S) Mountain

(a) AR
(b) RB
(c) CP
(d) DQ

143. Modern : I : : II : Old

I. (A) Ancient (B) Death
(C) Famous (D) Civilization
II. (P) Industrialisation (Q) Young
(R) Fashion (S) Western

(a) AQ
(b) AS
(c) BP
(d) CR

144. Part : I : : Class : II

I. (A) Section (B) Whole
(C) School (D) Student
II. (P) Student (Q) School
(R) Teachers (S) Rooms

(a) AR
(b) BQ
(c) CP
(d) DS

145. Summit : Apex : : I : II

I. (A) Beautiful (B) Picture
(C) Attractive (D) Enchanting
II. (P) Comfortable
(Q) Pretty
(R) Healthy
(S) Brave

(a) AQ
(b) BP
(c) DS
(d) CR

146. 'Jackal' is related to 'Carnivorous in the same way as 'Goat' is related to **[MBA CET Maharashtra 2009]**

(a) Omnivorous
(b) Carnivorous
(c) Herbivorous
(d) Multivorous

147. RADIO : UCHKT : : AUDIO : ? **[NIFT (PG) 2013]**

(a) CVHKT
(b) BWHKT
(c) DXHKT
(d) DWHKT

Directions (Q. Nos. 148-149) There are two pairs, the first pair follows some relationship. Use this relationship to find the analogy of the second pair. **[NIFT (PG) 2013]**

148. Rectangle : Pentagon

(a) Triangle : Rectangle
(b) Diagonal : Perimeter
(c) Side : Angle
(d) Circle : Square

149. Simmer : Boil

(a) Glide : Drift
(b) Drizzle : Downpour
(c) Gambol : Play
(d) Stagnate : Flow

Directions (Q. Nos. 150-153) Select the pair of words/ numbers that has the same analogous relationship as the original pair of words/numbers.

150. Propensity : Tendency **[FMS 2008]**
(a) Prologue : Epilogue (b) Master : Slave
(c) Audacity : Impudence (d) Conduct : Immortality

151. Intimidate : Wheedle **[FMS 2008]**
(a) Resolute : Impetuous (b) Coordinate : Disinter
(c) Defile : Rebuke (d) Extol : Disparage

152. Indefatigable : Inveterate **[IIFT 2012]**
(a) Tireless : Tired (b) Tired : Habitual
(c) Tireless : Habitual (d) Impoverished : Habitual

153. Misanthrope : Humanity **[IIFT 2012]**
(a) Chauvinist : Patriot (b) Misogynist : Women
(c) Agnostic : God (d) Witch : Magic

154. 'Celsius is related to 'Temperature' in the same way as 'Metre' is related to **[MHA-CET 2011]**
(a) Depth (b) Square (c) Tall (d) Kilometer

155. 'Seed' is related to 'Fruit' in the same way as 'Fruit' is related to **[MHA-CET 2009]**
(a) Tree (b) Branch (c) Flower (d) Petal

Response & Interpretations (Master Exercise)

1. (*d*) 'Menu' lists all the food items in a restaurant and in the same way, a catalogue is a list of all the books in a library.

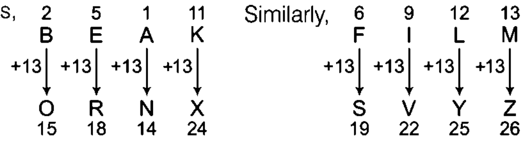
2. (*d*) 'Bleat' is the sound produced by goat and in the same way 'Grunt' is the sound produced by a 'Camel'.

3. (*b*) Former is the grown up state of latter.

4. (*d*) Both the words are opposite in meaning to each other.

5. (*c*) Birds can fly while snakes crawl for movement.

6. (*c*) As,



7. (*b*) Taka is the currency of Bangladesh. Similarly, Lira is the currency of Italy.

8. (*d*) 'Nurse' receives instructions from 'Doctor' and 'Follower' receives instructions from 'Leader'.

9. (*a*) 'Food' is consumed in the 'Stomach' and 'Fuel' is consumed in 'Engine'.

10. (*c*) Water' is contained in 'Ocean'. Likewise 'Sand' is contained in 'Desert'.

11. (*b*) 'Botany' is the branch of science which deals with the study of 'plants'. Similarly, 'Entomology' is the branch of science which deals with the study of insects.

12. (*c*) First is the meant for the second.

13. (*a*) A 'Bank' deals with transaction of 'Money'. Likewise 'Transport' deals with the movement of 'Goods'.

14. (*c*) 'Wings' are the parts of a 'Fan'. Likewise 'Spokes' are the parts of 'Wheel'.

15. (*b*) 'Captain' is supposed to lead the battalion of 'Soldiers' in the same way as 'Leader' is supposed to lead the 'Followers'.

16. (*b*) 'Skirmish', if uncontrolled gives rise to 'War'. In the same way, 'Disease', if uncontrolled gives rise to 'Epidemic'.

17. (*b*) 'Tree' originates from 'Root'. Likewise 'Smoke' originates from 'Fire'.

18. (*d*) 'Good' is the word opposite in meaning to 'Bad'. Similarly, 'Floor' is the antonym of 'Roof'.

19. (*b*) 'Oval' is the figure which is similar to the 'Circle'. Likewise 'Rectangle' is the figure which is similar to 'Square', as both of them have four corners.

20. (*d*) 'Umpire' is required to give decision in 'Match'. Likewise **'Judge'** is required to give decision in a 'Law Suit'.

21. (*c*) The given words in each pair are antonyms of each other.

22. (*a*) As 'Needle' requires 'Thread' for stiching, similarly, 'Pen' requires 'Ink' for writing.

23. (*c*) As 'umpire' is in the 'game', in the same way, 'legislator' is in the 'election'.

24. (*a*) 'Confession' is made on the basis of 'testimony', in the same way 'crime' is decided on the basis of the 'petition'.

25. (*a*) Person who is 'studious' will be 'Erudite', similarly a person who is 'Enterprising' will be 'Rich'.

26. (*d*) As 'Action' is followed by 'Reaction', in the same way 'Death' is followed by 'Rebirth'.

27. (*b*) Sides in figure second are double of sides of figure first.

28. (*a*) Both are synonyms of each other.

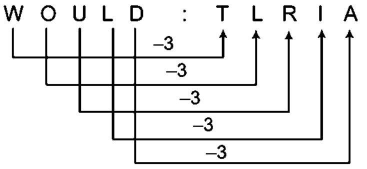
29. (*a*) As 'Cloth' has 'Texture', in the same way 'Body' has 'Weight'.

30. (*c*) As 'Nuts' are covered with 'bolts', in the same way a 'Naked' is covered with 'Clothes'.

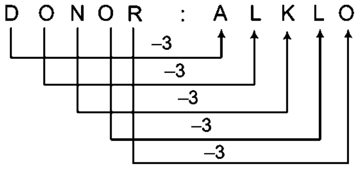
31. (*d*) Second shows the quality of first.

32. (*a*) Latter is the result of former.

33. (*a*) As,

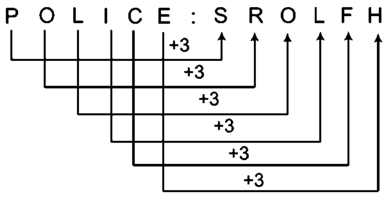


Similarly,

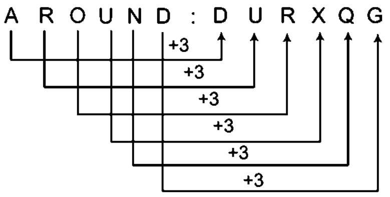


∴ ? = DONOR

34. (*a*) As,



Similarly,



∴ ? = AROUND

35. (*a*) As 'Hair' are present on 'Head', similarly, fingers are present in 'Hand.'

36. (*d*) As 'Running' is the higher form of 'Walking', similarly, 'Storm' is the higher form of 'Wind'.

37. (*c*) As, 'King' sits on the 'Throne', in the same way 'Rider' sits on the 'seat'.

38. (*d*) As, $F \xrightarrow{-5} A$, $I \xrightarrow{-5} D$, $L \xrightarrow{-5} G$, $M \xrightarrow{-5} H$ Similarly, $M \xrightarrow{-5} H$, $I \xrightarrow{-5} D$, $L \xrightarrow{-5} G$, $K \xrightarrow{-5} F$ $\boxed{\text{H D G F}}$

∴ ? = HDGF

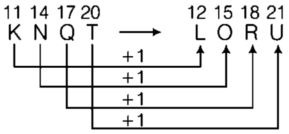
39. (*a*) As, $H \xrightarrow{-2} F$, $C \xrightarrow{-2} A$, $M \xrightarrow{-2} K$ Similarly, $S \xrightarrow{-2} Q$, $G \xrightarrow{-2} E$, $D \xrightarrow{-2} B$ $\boxed{\text{Q E B}}$

∴ ? = QEB

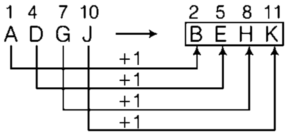
40. (*d*) As, by 'Tobacco', we can have 'Cancer', similarly by 'Mosquito', we can have 'Malaria'.

41. (*a*) If we move from West, clockwise through 135°, we get North-East direction. Similarly, if we move from South, clockwise through 135°, we get North-West direction.

42. (*a*) As,



Similarly,



43. (*c*) As, $\overset{17}{Q} \xrightarrow{+3} \underset{20}{T}$, $\overset{16}{P} \xrightarrow{+5} \underset{21}{U}$, $\overset{18}{R} \xrightarrow{+5} \underset{23}{W}$, $\overset{19}{S} \xrightarrow{+3} \underset{22}{V}$ Similarly, $\overset{10}{J} \xrightarrow{+3} \underset{13}{M}$, $\overset{9}{I} \xrightarrow{+5} \underset{14}{N}$, $\overset{11}{K} \xrightarrow{+5} \underset{16}{P}$, $\overset{12}{L} \xrightarrow{+3} \underset{15}{O}$

∴ ? = MNPO

44. (*a*) As, $42 = (7)^2 - 7, 56 = (8)^2 - 8$

Similarly, $110 = (11)^2 - 11$

and $(12)^2 - 12 = 132$

∴ ? = 132

45. (*b*) As, $5 \times 20 = 100, 4 \times 16 = 64$

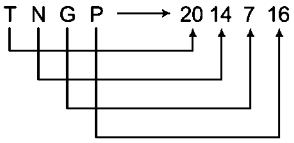
Similarly, $4 \times 20 = 80$ and $3 \times 16 = 48$

∴ ? = 48

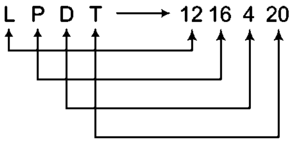
46. (*a*) As, $\overset{23}{W} \xrightarrow{+13} \underset{10}{J}$, $\overset{18}{R} \xrightarrow{+13} \underset{5}{E}$, $\overset{9}{I} \xrightarrow{+13} \underset{22}{V}$, $\overset{20}{T} \xrightarrow{+13} \underset{7}{G}$, $\overset{5}{E} \xrightarrow{+13} \underset{18}{R}$ Similarly, $\overset{23}{W} \xrightarrow{+13} \underset{10}{J}$, $\overset{18}{R} \xrightarrow{+13} \underset{5}{E}$, $\overset{15}{O} \xrightarrow{+13} \underset{2}{B}$, $\overset{14}{N} \xrightarrow{+13} \underset{1}{A}$, $\overset{7}{G} \xrightarrow{+13} \underset{20}{T}$

∴ ? = JEBAT

47. (*d*) As,



Similarly,



∴ ? = 1216420

48. (*a*) As, $P \to 16$, $S \to 19$, $T \to 20$

16 + 19 + 20 = 55

and digits sum of 55 = 5 + 5 = 10

Digits sum of 10 = 1 + 0 = 1

Similarly, $N \to 14$, $P \to 16$, $R \to 18$

14 + 16 + 18 = 48

Digits sum of 48 = 4 + 8 = 12

and digits sum of 12 = 1 + 2 = 3

∴ ? = 3

49. (*c*) As, $212 \xrightarrow{+224} 436$ (212 : 436) Similarly, $560 \xrightarrow{+224} 784$ (560 : 784)

∴ ? = 784

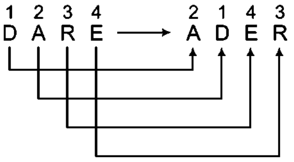
50. (*a*) As, 6 3 → 6 + 3 = 9 Similarly, 6 8 → 6 + 8 = 14

∴ ? = 68

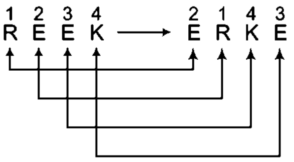
51. (*a*) As, 432 : 24 $(4 \times 3 \times 2)$ Similarly, 735 : 105 $(7 \times 3 \times 5)$

∴ ? = 105

52. (*c*) As,



Similarly,



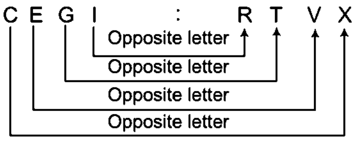
∴ ? = ERKE

53. (*b*) We obtain silk from 'Silkworm'. Similarly, we can get poison from Snake.

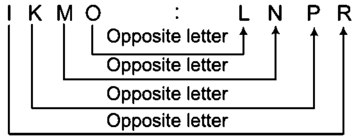
54. (*c*) As L and M are 12th and 13th letters respectively in English alphabet, similarly as U and W are 21st and 23rd letters, respectively in English alphabet.

55. (*d*) As letter 'a' comes at first position in English alphabet, similarly, 'f' comes at sixth position in English alphabet

56. (*c*) As, C E G I : R T V X


C E G I
:
R T V X
Opposite letter
Opposite letter
Opposite letter
Opposite letter

Similarly, I K M O : L N P R


I K M O
:
L N P R
Opposite letter
Opposite letter
Opposite letter
Opposite letter

∴ ? = LNPR

57. (*c*) Both the words are synonyms of each other.

58. (*c*) Both the words are synonyms of each other.

59. (*b*) As, $15 + 12 = 27$

$27 + 12 = 39$

Similarly, $105 + 20 = 125$

$125 + 20 = 145$

60. (*d*) Every number in each set is a perfect square

As, $49 = 7^2, 81 = 9^2, 25 = 5^2$

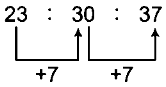
Similarly, $100 = 10^2, 289 = 17^2, 4 = 2^2$

61. (*a*) First number is the addition of the last two.

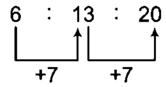
As, $5 + 7 = 12$

Similarly, $4 + 3 = 7$

62. (*a*) As, 23 : 30 : 37 =



Similarly, 6 : 13 : 20 =



63. (*b*) 'Omniscient' is an adjective used for someone who has the 'Knowledge' of all things. Similarly, 'Boundless' is an adjective used for 'Expanse'.

64. (*c*) A nebulous form means having an ambiguous form same as an insipid taste which is dull, boring, almost no taste.

65. (*c*) As 'Inexperience' causes 'Errors', similarly, 'Carelessness' causes 'Losses'.

66. (*c*) As study of 'Brain' is called 'Neurology', similarly, 'Study' of 'Body' is called 'Physiology'.

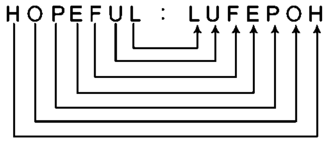
67. (*a*) As 'Quack' is sound of 'Duck', similarly, 'Growl' is sound of 'Dog'.

68. (*b*) As 'Picture' is related to 'See', similarly the 'Book' is related to 'read'.

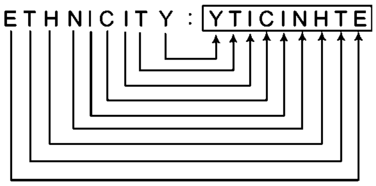
69. (*d*) Both the words are opposite in meaning to each other.

70. (*c*) As, 'Swimming' takes place in 'river', similarly, 'Hiking' takes place on 'mountain'.

71. (*a*) As, H O P E F U L : L U F E P O H


H O P E F U L
:
L U F E P O H

Similarly, E T H N I C I T Y : $\boxed{\text{Y T I C I N H T E}}$


E T H N I C I T Y
:
Y T I C I N H T E

∴ ? = YTICINHTE

72. (*d*) As, with every 'Right' comes a 'Duty', similarly 'Power' invites 'Liability'.

73. (*c*) Young one of an 'Elephant' is 'Calf' and that of a 'Tiger' is 'Cub'.

74. (*d*) As, a 'Patient' goes to a 'Doctor' for medical help, similarly a 'Litigant' goes to a 'Lawyer' for legal help.

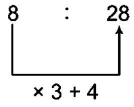
75. (*c*) United Nations was created after World War II and league of Nations was created after World War I.

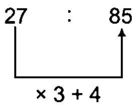
76. (*c*) As, $841 = (29)^2$

Similarly, $289 = (17)^2$

$\therefore ? = 17$

77. (*a*) As, 8 : 28 Similarly, 27 : 85





∴ ? = 85

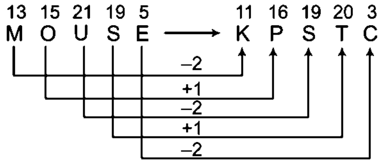
78. (*b*) As for finishing the 'Leather', 'Tanning' method is used, in the same way for 'Fireworks' 'Pyrotechnics' is used.

79. (*a*) As, $F = 6 \Rightarrow 6^3 = 216$

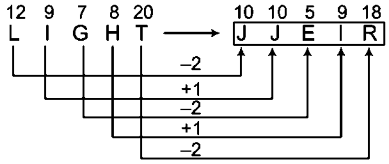
Similarly, $L = 12 \Rightarrow (12)^3 = 1728$

$\therefore ? = 1728$

80. (*c*) As,


13 15 21 19 5
M O U S E
11 16 19 20 3
K P S T C
–2
+1
–2
+1
–2

Similarly,


12 9 7 8 20
L I G H T
10 10 5 9 18
J J E I R
–2
+1
–2
+1
–2

∴ ? = JJEIR

81. (*c*) As, sum of digits of $584 = 5 + 8 + 4 = 17$

and sum of digits of $488 = 4 + 8 + 8 = 20$

Similarly, sum of digits of $294 = 2 + 9 + 4$

$= 15$

∴ Sum of digits of $378 = \boxed{3 + 7 + 8} = 18$

Here, difference of both are $(20 - 17) = (18 - 15) = 3$

$\therefore ? = 378$

82. *(b)* As, $\begin{array}{cccc} A & H & O & P \\ \big\downarrow{+2} & \big\downarrow{+3} & \big\downarrow{+4} & \big\downarrow{+5} \\ C & K & S & U \end{array}$ Similarly, $\begin{array}{cccc} B & J & M & F \\ \big\downarrow{+2} & \big\downarrow{+3} & \big\downarrow{+4} & \big\downarrow{+5} \\ \end{array}$ $\boxed{D \quad M \quad Q \quad K}$

$\therefore$? = DMQK

83. *(c)* As NOITACUDE is made by reversing the order of the letters of the word EDUCATION, similarly reverse order of the letters of the word INTELLIGENCE is ECNEGILLETNI.

84. *(c)* Each letter in the word is replaced by the letter proceeding and following it in the alphabetical series.

85. *(c)* As 'Australia' is a 'Continent', similarly, 'Vikrant' is a 'Ship'.

86. *(c)* The given pair contains synonymous words but the second word has a higher degree.

87. *(a)* 'Ballad' is a type of poem, in the same way as 'Snake' is a type of 'Reptile'.

88. *(a)* As, $5 \times 7 = 35$ *i.e.,* 5 multiplied with next prime number *i.e.,* 7.

Similarly, $7 \times 11 = 77$ *i.e.,* 7 multiplied with next prime number *i.e.,* 11.

89. *(b)* Relation – Condition : characteristic behavior.

'Impecunious' means 'Poor' and 'Mendicant' means 'Begging'. Petulant means 'Bad tempered' who is a complainer.

90. *(c)* Relation – Noun : opposite adjective.

'Infallible' means never committing 'Error', 'Impeccable' means 'flawless'.

91. *(a)* Relation – Factor : Something that causes it.

'Lachrymose' means causing 'Tears' while so many 'Words' makes a written matter 'verbose'.

92. *(a)* Relation – Noun : opposite adjective.

Apocryphal means **false**, Nefarious means wicked.

93. *(d)* Relation – Noun : verb.

Grovel means to be servile, fume means to show anger.

94. *(d)* As, $41537 \Rightarrow 4 + 1 + 5 + 3 + 7 = 20$

$\Rightarrow 2 + 0 = 2 \Rightarrow (2)^2 = 4$

Similarly, $421 \Rightarrow 4 + 2 + 1 = 7$

$\Rightarrow (7)^2 = 49$

95. *(b)* As, $12 \xrightarrow{\times 2+6} 30$

Similarly, $18 \xrightarrow{\times 2+6} 42$

96. *(c)* First is required for the second.

97. *(d)* The words in each pair are synonyms.

98. *(a)* Second is obtained from the first.

99. *(c)* 'Lightning' occurs in 'Clouds' and 'Rainbow' is formed in the 'Sky'.

100. *(c)* Second is an enlarged form of the first.

101. *(a)* Both the words are opposite in meaning.

102. *(b)* Both the words are opposite in meaning.

103. *(a)* 'Asinine' means 'foolish'; or like a donkey, similarly 'Vulpine' means 'Cunning' or resembling a 'fox'. 'Avian' means 'of or pertaining to birds' in general, and not specifically doves. Hence, the correct answer is option (a).

104. *(b)* A 'Stallion' is a male-horse while a 'More' is a female horse. Therefore, the relationship is Male : Female. In options (a), (c) and (d) this relationship is inverted. In option (b) 'Ram', a male sheep, proceeds 'ewe' a female sheep.

105. *(d)* 'Mycology' is the study of 'Fungi'; in the same way 'Pedology' is the study of 'Soil'.

106. *(a)* 'Alleviate' means 'to Reduce' and 'Aggravate' means 'to Intensify'. So, it is a clear opposite analogy and it is similar to 'Elastic' and 'Rigid' which are mutually opposite.

107. *(a)* Second is the young-one of first.

108. *(d)* Muddy, Benevolent and kind are mutually synonyms, so muddy is the best option which is similar to unclear in meaning.

109. *(b)* Country and capital pair.

110. *(d)* 'Error' and 'Mistake' are synonyms to each other and 'Doubt' and 'Suspicion' are also synonyms to each other.

111. *(d)* Second is the sound produced by the first.

112. *(a)* As, 'Tobacco' is the prime constituent of 'Cigarette', similarly, 'Caffeine' is the prime constituent of 'Coffee'.

113. *(d)* A 'Traveller' travels for reaching 'Destination', in the same way 'Refugee' travels for 'Shelter'.

114. *(b)* 'Apostate' is one who 'prsakes Religion', in the same way 'Traitor' is one who 'Betrays' his country.

115. *(d)* 'Glint' is a flash of 'Light', similarly 'Blare' is a loud 'Sound'.

116. *(a)* Synonymous word relationship.

117. *(c)* A Citizen must be patriotic to his Country. Similarly, a Student should concentrate on Studies.

118. *(c)* A 'Surgeon' uses 'Scalpel' for doing operation, in the same way 'Sculptor' uses his 'Chisel' for making sculptor.

119. *(d)* A 'Bull' bears 'Horns' on its head, in the same way as a 'Stag' bears 'Antlers' on its head.

120. *(d)* As, 'Web' is made by 'Spider', in the same way 'Poetry' is made by 'Poet'.

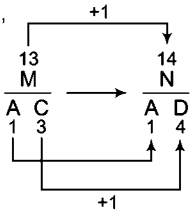
121. *(c)* As, 'Synagogue' is the worship place of 'Jew', in the same way 'Pagoda' is the worship place of 'Buddhists'.

122. *(d)* 'Steel' is an 'Alloy' and 'Zinc' is a 'Metal'. Hence, none of the options gives the correct answer.

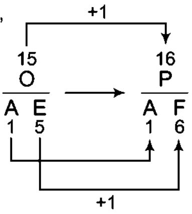
123. *(c)* In option (a) the relationship is – Derivative colour : Main colour; in option (b) there is relationship of opposite (Inter = to bury, Exhume = to dig out, Piebald = heterogeneous in hair colour); in option (c) there is relationship of opposite (Effete = unproductive, Fructuous = fertile, Chapfallen = depressed, Effervescent = energetic or excited); in option (d) the relationship is – Branch of study: Studied field.

124. *(c)* In option (a) the relationship is – Type of person using different types of something. : The thing (Polyglot = one who uses different languages, polyphagous = one who uses different foods); in option (b) there are synonyms (Escutcheon/Scutcheon = a shield, Fabulist = liar); in option (c) the relationship is – Disease : Caused by the deficiency of. In option (d) two unrelated analogies are given; apothecary is one who sells drugs and cruciverbalist is one who is skillful in solving crosswords.

125. (*a*) As,

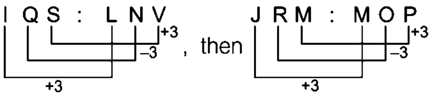


Similarly,



$\therefore ? = \frac{P}{AF}$

126. (*b*)



127. (*d*) As, $\underset{(5^2-1)}{\overset{\uparrow}{24}} : \underset{(5^3+1)}{\overset{\uparrow}{126}}$ Similarly, $\underset{(7^2-1)}{\overset{\uparrow}{48}} : \underset{(7^3+1)}{\overset{\uparrow}{344}}$

$\therefore ? = 344$

128. (*c*) In each set,

2nd number = (1st number – 3rd number)

As, 32 – 8 = 24

Similarly, 24 – 8 = 16

129. (*c*) In each set,

2nd number = 1st number – 4

3nd number = 2st number – 8

As, 77 = 81 – 4

and 69 = 77 – 8

Similarly, 52 = 56 – 4

and 44 = 52 – 8

130. (*b*) 'Valueless' is worthless and 'Invaluable' is indispensable. In the same way, 'Miserly' is a person having miser or mean characteristics and 'Philanthropic' is one who seeks to promote the welfare of others.

131. (*b*) As the 'Spear' is 'Thrusted', in the same way 'Iron' is 'Mangled'.

132. (*d*) As 'Money' is a source of 'Transaction', in the same way 'Language' is a source of 'Conversation'.

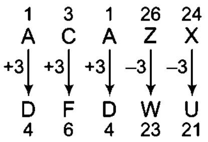
133. (*d*) As 'Sunrise' and 'Sunset' are opposite to each other, in the same manner 'Energetic' and 'Lazy' are opposite to each other.

134. (*c*) 'River' flows to meet the 'Ocean', in the same way 'Lane' goes onto meet the 'Road'.

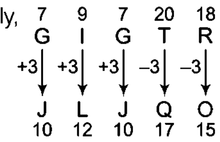
135. (*c*) As 'Gloves' are worn on 'Hands', in the same way 'Socks' are worn on 'Feet'.

136. (*b*) When sound is lowered, it is called muffled and in the same way when intensity of colour is lowered, it is called faded.

137. (*b*) As,

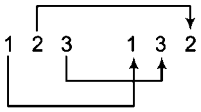


Similarly,

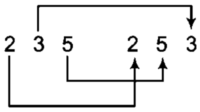


$\therefore ? =$ JLJQO

138. (*b*) As,

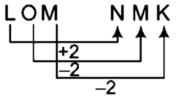


Similarly,

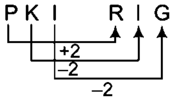


$\therefore ? = 25^3$

139. (*c*) As,

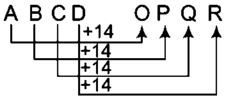


Similarly,

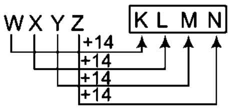


140. (*d*) As, 'Panther' is a flesh eating or 'Carnivorous' animal, similarly 'Buffalo' is a vegetarian or 'Herbivorous' animal.

141. (*c*) As,



Similarly,



142. (*b*) RB shows the correct analogy with exact antonyms in both the pairs - Ascend : Increase : : Descend : Decrease. Here, ascent is the antonym of descent and increase is the antonym of decrease.

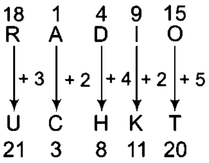
143. (*a*) AQ gives the perfect antonymous analogous relationship - Modern : Ancient : : Young : Old.

144. (*b*) Part and whole relationship - Part : Whole : : Class : School.

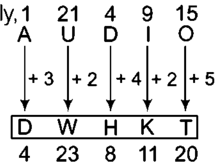
145. (*a*) Summit and Apex are synonymous. The only option which comes close to being a synonym is AQ - Beautiful : Pretty.

146. (*c*) As, 'Jackal' is a flesh eating or 'Carnivorous' animal, similarly 'Goat' is a vegetarian or 'Herbivorous' animal.

147. (*d*) As,



Similarly,



$\therefore ? =$ DWHKT

148. (*a*) Rectangle : Pentagon

As, rectangle has 4 sides and pentagon has 5 sides, one more side than rectangle, in the same way, triangle has 3 sides and rectangle has 4 sides, one more side than rectangle.

∵ Second analogy = Triangle : Rectangle

149. (*b*) Simmer is to cook slowly and boil is when it is heated very heavily, in the same way drizzle is raining slowly and down pour is very heavy rainfall suddenly.

150. (*c*) Both the words are synonyms of each other.

151. (*d*) Both the words are antonyms. As wheedle means to flatter and intimidate means giving threats, similarly disparage means to insult and extol means to praise.

152. (*c*) As, indefatigable means never giving up or getting tired of doing something and inveterate means always doing something or unlikely to stop.

Similarly, tireless means putting a lot of effort and energy to do something over a long period of time and habitual means doing something often and difficult to stop.

153. (*b*) As 'Misanthrope' means a person who hates and avoids 'Humanity' (people in general), similarly, 'Misogynist' is a man who hates 'Women'.

154. (*c*) As 'Celsius' is the unit of measurement of 'Temperature', similarly, 'Meter' is the unit of measurement of 'Tall'.

155. (*a*) 'Seed' is the part of 'Fruit', in the same way 'Fruit' is the part of 'Tree'.

2

Classification

Classification is the process of grouping various objects on the basis of their common properties like shape, size, category, colour, trait etc., and finding the odd object from the group.

Different type of questions covered in this chapter are as follows

- Choosing the Odd Word
- Choosing the Odd Pair of Words
- Choosing the Odd Letter/Group
- Choosing the Odd Number/Pair/Group

In this chapter, the questions contain a set of different items and it is asked to find the odd item out of the given ones.

All the items except one, follow a certain rule or pattern or they possesses some common quality or characteristics between them and one which is odd does not possesses the common quality or characteristics.

Let take some examples

(i) Find the odd word from the group.

(a) Apple (b) Grapes (c) Banana (d) Potato

Sol. (*d*) Now, when we closely observe the different words we find that all are edibles *i.e.,* consumed as food by human beings. But apple, grapes and banana comes under the category of fruits and potato is a vegetable.

So, the odd word from the group is potato.

(ii) Find the odd word from the group.

(a) Dog (b) Cow (c) Goat (d) Buffalo

Sol. (*a*) All, are pet animals but we have to find the odd amongst them. Except dog, all are herbivorous animals *i.e.,* feed on green grass, whereas dog is an omnivorous animal *i.e.,* feeds on flesh and vegetarian food.

So, the odd word from the group is dog.

Questions on classification requires a strong vocabulary and general knowledge.

Some of the classified groups and subgroups are given below to boost up the knowledge

Group, Subgroups and Units

Group	Subgroups	Units
World	• Continent	Asia, Africa, Europe, Australia, North America, South America, Antarctica
	• Ocean	Pacific Ocean, Atlantic Ocean
	• Country	India, Pakistan, China, Nepal, Sri Lanka, Myanmar, Bhutan, Japan, USA, Italy, France, Canada, Germany
	• Capital of Country	New Delhi, Kabul, Tokyo, Kathmandu, Moscow, London
	• Currency of Country	Rupee, Yen, Euro, Dollar, Yuan, Afghani, Rubal
	• Language of Country	Hindi, Arabi, English, Nepali, Mandarin
	• Parliament of Country	Congress, Duma, Diet, Shora, Parliament, Majlis
	• Rivers of Country	Ganga, Sindhu, Nile, Sin, Thames, Danube
	• Sports of Country	Hockey, Cricket, Rugby, Football, Baseball, Ice Hockey
	• Tribes of Country	Red Indians, Negro, Afridi, Kurd, Muri
India	• State	Uttar Pradesh, Madhya Pradesh, Arunachal Pradesh, Uttarakhand, Jharkhand
	• Union Territories	Delhi, Chandigarh, Pondicherry, Lakshay deep, Daman and Diu, Andaman and Nicobar Islands, Dadar and Nagar haveli
	• Capitals of State	Lucknow, Dehradun, Patna, Ranchi, Jaipur, Bhopal
	• City	New Delhi, Mumbai, Kolkata, Lucknow, Chennai, Allahabad
	• Rivers	Ganga, Yamuna, Saraswati, Narmada, Koshi, Son
Planets	• Planet	Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune
Time	• Day	Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday
	• Months	
	(i) 28 days	February
	(ii) 29 days	February (leap year)
	(iii) 30 days	April, June, September, November
	(iv) 31 days	January, March, May, July, August, October, December
Science	• Branch	Physics, Chemistry, Biology
	• Tools	Hygrometer, Lactometer, Aerometer, Fathometer
	• Unit	Jule, Watt, Newton, Dyne, Hertz, Calorie
	• Vitamin	A, B, C, D, E, K
	• Quantity	Force, Work, Energy, Power, Heat, Frequency
Person	• Profession	Doctor, Teacher, Writer, Carpenter, Barber
Parts of Body	• Above the Neck	Eyes, Ears, Nose, Mouth, Head, Face
	• Above the Waist	Neck, Shoulder, Hand, Chest, Back
	• Below the Waist	Heel, Leg, Thigh, Knee, Sole
	• Internal Parts	Heart, Kidney, Lungs, Small intestine, Large intestine, Liver, Brain
	• External Parts	Nose, Hand, Leg, Back
	• Sense Organs	Nose, Ears, Eyes, Tongue etc.
Animals	• Herbivorous	Cow, Buffalo, Ass, Elephant, Horse, Zebra, Deer, Hippopotamus
	• Carnivorous	Lion, Tiger, Jackal, Fox
	• Omnivorous	Rat, Pig, Bear, Cat, Dog
	• Young One	Puppy (Dog), Lamb (Sheep), Calf (Cow), Piglet (Pig), Leveret (Rabbit), Pony (Horse), Cub (Lion)
	• Sound	Bark (Dog), Meow (Cat), Neigh (Horse), Roar (Lion)
Birds	• Flying Birds	Vulture, Crow, Pigeon
	• Non-flying Birds	Swan, Duck, Cock
	• Night flying Birds	Owl, Kakapo
	• Young One	Cygnet (Swan), Duckling (Duck), Eaglet (Eagle), Chicken (Hen), Owlet (Owl)
	• Sound	Quack (Duck), Caw (Crow), Ku-Ku (Cuckoo)

Group	Subgroups	Units
Crops	• Cereals	Wheat, Rice, Barley, Pulses, Corn, Millet
	• Cash Crops	Jute, Coffee, Sugarcane, Tobacco, Cotton
	• Rabi	Wheat, Barley, Gramme, Mustard, Rye, Soyabean
	• Kharif	Rice, Corn, Millet, Sugarcane, Cotton
	• Zaid	Watermelon, Cucumber, Muskmelon, Bitter gourd
Fruit	• Juicy Fruit	Mango, Orange, Pomegranate, Grapes
	• Dry Fruits	Cashew, Almond, Currant, Dates, Pea nuts, Chestnut, Wall nuts
Vegetables	• Green Vegetable	Cabbage, Cauliflower, Brinjal, Bitter gourd
	• Vegetable with Fibres	Beans, Ladyfinger
	• Salad	Tomato, Carrot, Radish, Onion
Spices	• Liquidy Spices	Onion, Ginger, Green chilly, Garlic, Coriander, Turmeric
	• Dry Spices	Bey leaf, Red chilly, Black Cardamom, White Pepper, Cumin
Miscellaneous	• Furniture	Chair, Table, Sofa, Bed
	• Computer	Keyboard, Mouse, Motherboard
	• House	Window, Door, Roof
	• Learned Persons	Professor, Teacher, Journalist, Editor, Writer
	• Sports	Cricket, Hockey, Chess, Football
	• Delhi	Red Fort, Qutub Minar, Chandni Chowk
	• Religious Books	Bhagwad Geeta, Quran, Mahabharata, Ramayana
	• Publication	Printing, Proofreading, Composing, Editing
	• Organs	Eyes, Ear, Nose, Mouth, Hand, Leg
	• Eatables/Grain	Cereal, Vegetable, Sweets, Fruits
	• Metals	Iron, Nickel, Cobalt, Copper, Zinc, Aluminium etc.
	• Non-Metals	Hydrogen, Chlorine, Fluorine, Carbon, Helium etc.
	• Gases	Oxygen, Nitrogen, Argon, Bromine, Chlorine etc.
	• Alloys	Bronze, Alnico, Brass, Scandium etc.
	• In door Games	Chess, Table tennis, carrom, Ludo, Badminton, Playing card etc.
	• Out door Games	Cricket, Foot ball, Hockey, Lawn tennis, etc.
	• Geometrical Shapes (two-dimensional)	Circle, Triangle, Rectangle, Rhombus, Square etc.
	• Geometrical Shapes (three-dimensional)	Pyramid, Cube, Cuboid, Cylinder, Sphere etc.
	• Ranks — Army	General, Major General, Lieutenant General, Colonel, Major, Captain, Brigadier.
	— Navy	Admiral, Vice-Admiral, Commander, Captain etc.
	— Airforce	Air Chief Marshal, Group Captain, Air Marshal, Wing Commander, Air Commander etc.
	• Stationery	Pen, Pencil, Eraser, Sharpener, Paper etc.
	• Diseases caused by Virus	Small pox, Hepatitis, Measles Rabies, AIDS, Mumps etc.

From this chapter, several types of problems are asked in various competitive exams. So, we have classified these types of problems as follows

Type 1 Choosing the Odd Word

In this type of questions, four/five options are given and you have to select the odd word which does not possess the common property like the words given in other options. This odd word is your answer. Word classification is based on some common properties of words.

Some of these common properties are given below

(i) Meaning based classification
(ii) Work based classification
(iii) Place based classification
(iv) Number based classification
(v) Technology based classification
(vi) Rank based classification
(vii) Area of usage related classification
(viii) Priority based classification
(ix) Category based classification
(x) Situation based classification, etc.

Directions (Example Nos. 1-17) In each of the following questions, a group of four words are given. Choose the word which is odd.

***Ex* 1** Find the odd word.

(a) Walking (b) Running
(c) Moving (d) Reading

Sol. (*d*) All except 'Reading' are related to motion.

***Ex* 2** Find the odd word.

(a) Knife (b) Scissors
(c) Axe (d) Hammer

Sol. (*d*) All except 'Hammer' are used for cutting.

***Ex* 3** Find the odd word.

(a) Car (b) Bus
(c) Scooter (d) Jeep

Sol. (c) All except 'Scooter' are four wheelers.

***Ex* 4** Find the odd word.

(a) Tongue (b) Nose
(c) Eye (d) Mouth

Sol. (c) All except 'Eye' are parts of body equal in numbers.

***Ex* 5** Find the odd word.

(a) Ghaziabad (b) Varanasi
(c) Gorakhpur (d) Bhagalpur

Sol. (*d*) All except 'Bhagalpur' are in the state of Uttar Pradesh.

***Ex* 6** Find the odd word.

(a) Commander (b) Major
(c) Brigadier (d) Captain

Sol. (*a*) All except 'Commander' are ranks of army.

***Ex* 7** Find the odd word.

(a) Pen (b) Book
(c) Page (d) Pencil

Sol. (*b*) All except 'Book' are used for writing work.

***Ex* 8** Find the odd word.

(a) Bhagwad Geeta (b) Quran
(c) Ramayana (d) Mahabharata

Sol. (*b*) All except 'Quran' are religious epics of Hindus.

***Ex* 9** Find the odd word.

(a) Silver (b) Iron
(c) Gold (d) Hydrogen

Sol. (*d*) All except 'Hydrogen' are metals.

***Ex* 10** Which of the following words is the odd one? **[OBC (Clerk) 2009]**

(a) AC (b) Calculator
(c) Cooler (d) Computer
(e) Television

Sol. (*b*) All except 'Calculator' need electricity to function.

***Ex* 11** Pick out the odd word from given options?

(a) Tongue (b) Lips
(c) Brain (d) Nose

Sol. (c) All except 'Brain' are sense organs of human.

***Ex* 12** Find the odd word. **[SSC (Steno) 2012]**

(a) Slip (b) Diamond
(c) Googli (d) Doosra

Sol. (*b*) All except 'Diamond' are terms related to cricket.

***Ex* 13** Find the odd word. **[LIC (ADO) 2010]**

(a) Orange (b) Apple
(c) Guava (d) Grapes
(e) Pomegranate

Sol. (*d*) Only Grapes grow in bunches and so it is odd one among others.

***Ex* 14** Find the odd word. **[SSC (CPO) 2011]**

(a) Peso (b) Drachma
(c) Shora (d) Baht

Sol. (c) All others are currencies, while 'Shora' is the Parliament of Afganistan.

***Ex* 15** Find the odd word.

(a) Puppet (b) Documentary
(c) Animation (d) Commentary

Sol. (*d*) 'Commentary' is the description of all other shows.

***Ex* 16** Find the odd word.

(a) Complicated (b) Tricky
(c) Complex (d) Confusing

Sol. (c) All other terms are used to denote the 'Complex' nature of something.

***Ex* 17** Find the odd word. **[SSC (Multitasking) 2010]**

(a) Square (b) Sphere
(c) Rectangle (d) Circle

Sol. (*b*) All except Sphere are two-dimensional figures.

Practice Corner **2.1**

Build your Confidence...

Directions (Q. Nos. 1-121) In the following questions, three or four alternatives are same in a certain way out of four or five and so form a group. Find the odd word that does not belong to the group.

1. (a) Cello (b) Guitar (c) Flute (d) Violin **[SSC (Multitasking) 2013]**

2. (a) Sweetness (b) Elegant (c) Bright (d) Beautiful **[SSC (Multitasking) 2012]**

3. (a) Mile (b) Centimetre (c) Litre (d) Yard **[SSC (CPO) 2010]**

4. (a) Eyes (b) Ears (c) Throat (d) Skin **[SSC (Steno) 2012]**

5. (a) 14th November (b) 15th August (c) 26th January (d) 2nd October **[SSC (10 + 2) 2011]**

6. (a) Bus (b) Scooter (c) Cycle (d) Boat **[SSC (CGL) 2011]**

7. (a) Apple (b) Orange (c) Potato (d) Guava

8. (a) Rose (b) Lily (c) Lotus (d) Grapes

9. (a) Tomato (b) Potato (c) Carrot (d) Onion

10. (a) January (b) June (c) July (d) August **[SSC (LDC) 2010]**

11. (a) Chop (b) Slit (c) Chirp (d) Slice **[SSC (Multitasking) 2013]**

12. (a) Goat (b) Dog (c) Sheep (d) Cow **[RRB (Group 'D') 2012]**

13. (a) Iron (b) Mercury (c) Silver (d) Gold **[SSC (Constable) 2010]**

14. (a) Zinc (b) Bronze (c) Silver (d) Platinum **[SSC (CGL) 2013]**

15. (a) Ink (b) Paper (c) Office (d) Pen **[SSC (CPO) 2010]**

16. (a) Temple (b) Mosque (c) Theatre (d) Church

17. (a) Sweet (b) Sour (c) Salty (d) Tasteless

18. (a) Violin (b) Sitar (c) Veena (d) Flute

19. (a) Bengaluru (b) Patna (c) Bhagalpur (d) Ranchi

20. (a) Carpenter (b) Goldsmith (c) Blacksmith (d) Driver

21. (a) Circle (b) Triangle (c) Rectangle (d) Square

22. (a) Bat (b) Parrot (c) Crow (d) Pigeon **[SSC (10 + 2) 2013]**

23. (a) Cube (b) Square (c) Cuboid (d) Sphere

24. (a) Daughter (b) Mother (c) Sister (d) Brother

25. (a) Father (b) Mother (c) Friend (d) Brother

26. (a) Red (b) Blue (c) Yellow (d) Black **[UP B.Ed. 2010]**

27. (a) Kanpur (b) Lucknow (c) Lahore (d) Patna

28. (a) Ample (b) Copious (c) Plentiful (d) Abundance **[SSC (10+2) 2013]**

29. (a) Shiv (b) Ganesh (c) Durga (d) Vishnu

30. (a) Eye (b) Bone (c) Ear (d) Hand

31. (a) Parrot (b) Bat (c) Crow (d) Sparrow **[SSC (CPO) 2009]**

32. (a) Diamond (b) Ruby (c) Marble (d) Sapphire

33. (a) Rifle (b) Cannon (c) Sword (d) Pistol

34. (a) Orange (b) Litchi (c) Apple (d) Guava

35. (a) Papaya (b) Watermelon (c) Jackfruit (d) Guava

36. (a) Beijing (b) Melbourne (c) Paris (d) Athens

37. (a) Stag (b) Kitten (c) Colt (d) Fawn **[SSC (CGL) 2011]**

38. (a) Bitch (b) Horse (c) Cow (d) Vixen

39. (a) Ring (b) Tyre (c) Plate (d) Bangle (e) Rubber Tube **[SBI (Clerk) 2011]**

40. (a) Fingers (b) Hands (c) Ears (d) Eyes

41. (a) Giraffe (b) Zebra (c) Lion (d) Horse

42. (a) Bake (b) Fry (c) Roast (d) Peel

43. (a) Tomato (b) Potato (c) Rice (d) Rose (e) Mango **[UCO Bank (PO) 2011]**

44. (a) Crow (b) Vulture (c) Sparrow (d) Bat

45. (a) Graph (b) Chart (c) Model (d) Drawing (e) Figure **[IBPS (Clerk) 2012]**

46. (a) Mattress (b) Pillow (c) Bed sheet (d) Curtain

47. (a) Needle (b) Pencil (c) Spade (d) Candle

48. (a) Basket (b) Barrel (c) Bag (d) Barrow

49. (a) Cricket (b) Baseball (c) Football (d) Billiards

50. (a) Genius (b) Geyser (c) Gesture (d) Revenge

51. (a) Pew (b) Altar (c) Mettle (d) Choir

52. (a) Scorpio (b) Cancer (c) Capricorn (d) Equator

53. (a) Violin (b) Guitar (c) Sitar (d) Piano

54. (a) Hydrometer (b) Barometer (c) Diameter (d) Hygrometer **[SSC (CPO) 2010]**

55. (a) Sneeze (b) Whistle (c) Snore (d) Cough

56. (a) Camel (b) Goat (c) Cow (d) Dog

57. (a) Bhils (b) Todas (c) Sikhs (d) Nagas

58. (a) Cricket (b) Hockey
(c) Shuttle Cock (d) Tennis **[UP B. Ed. 2011]**

59. (a) Sitar (b) Flute (c) Violin (d) Santoor
(e) Sarod **[SBI (Clerk) 2010]**

60. (a) Jug (b) Pitcher (c) Tumbler (d) Bottle
(e) Saucer **[LIC (ADO) 2011]**

61. (a) Van (b) Truck (c) Cargo (d) Trolley
(e) Tempo **[Canara Bank (PO) 2008]**

62. (a) Camel (b) Horse (c) Ox (d) Cat
(e) Ass **[IBPS (Clerk) 2011]**

63. (a) Leaf (b) Flower (c) Fruit (d) Branch
(e) Root **[IBPS (Clerk) 2011]**

64. (a) Pen (b) Marker (c) Paper (d) Pencil **[RRB (Group 'D') 2012]**

65. (a) Blackmail (b) Smuggling (c) Snobbery (d) Forgery

66. (a) Yen (b) Lira (c) Dollar (d) Ounce

67. (a) Moon (b) Football (c) Earth (d) Bangle

68. (a) Raft (b) Chariot (c) Sledge (d) Cart **[SSC (10 + 2) 2012]**

69. (a) Book (b) Pages (c) Index (d) Chapters

70. (a) Huge (b) Tiny (c) Heavy (d) Small

71. (a) Spring (b) Heat (c) Winter (d) Autumn

72. (a) Igloo (b) House (c) Hut (d) Flat
(e) Factory **[IBPS (Clerk) 2011]**

73. (a) Cholera (b) AIDS (c) Cancer (d) Health
(e) Jaundice **[LIC (AAO) 2011]**

74. (a) Sweater (b) Blouse (c) Trouser (d) Shirt

75. (a) Sky (b) Star (c) Planet (d) Comet

76. (a) Rigveda (b) Yajurveda
(c) Atharvaveda (d) Ayurveda

77. (a) Teeth (b) Tongue (c) Palate (d) Chin

78. (a) Torrent (b) Lake (c) River (d) Stream

79. (a) Barter (b) Purchase (c) Sale (d) Borrow **[SSC (10 + 2) 2013]**

80. (a) Political Science (b) History
(c) Philosophy (d) Physics **[SSC (CPO) 2013]**

81. (a) Gandhi (b) Buddha (c) Mahavira (d) Christ

82. (a) Rickshaw (b) Taxi (c) Tonga (d) Cart

83. (a) Java (b) Tasmania (c) Sri Lanka (d) Malaysia

84. (a) Anger (b) Destroy (c) Irritation (d) Rage **[SSC (Multitasking) 2014]**

85. (a) Mountain (b) Hill (c) Plateau (d) Plane **[SSC (10 + 2) 2013]**

86. (a) Triangle (b) Tangent (c) Square (d) Rhombus

87. (a) Asia (b) Australia (c) America (d) England

88. (a) Konark (b) Madurai (c) Elora (d) Khajuraho

89. (a) Trident (b) Triumph (c) Tripod (d) Triangle

90. (a) Peak (b) Mountain (c) Hillock (d) Valley **[SSC (FCI) 2012]**

91. (a) Mumbai (b) Bhubaneshwar
(c) Hyderabad (d) Jaipur
(e) Allahabad **[LIC (ADO) 2008]**

92. (a) Cup (b) Jug (c) Basket (d) Plate
(e) Pitcher **[PNB (Clerk) 2010]**

93. (a) Bus (b) Train (c) Truck (d) Wheel
(e) Taxi **[IOB (Clerk) 2008]**

94. (a) Building (b) Toy (c) Vehicle (d) Mountain
(e) Machine **[OBC (PO) 2009]**

95. (a) Multiplication (b) Interview
(c) Test (d) Observation **[SSC (CPO) 2013]**

96. (a) Volume (b) Size (c) Large (d) Shape
(e) Weight **[PNB (PO) 2005]**

97. (a) Guava (b) Orange (c) Apple (d) Litchi
(e) Pear **[PNB (PO) 2005]**

98. (a) Aluminium (b) Copper (c) Mercury (d) Iron

99. (a) Swimming (b) Sailing (c) Diving (d) Driving **[EPFO 2011]**

100. (a) Gallon (b) Ton (c) Quintal (d) Kilogram **[SSC (CPO) 2012]**

101. (a) Stream (b) Spring (c) Dam (d) River **[SSC (FCI) 2012]**

102. (a) Mare (b) Stag (c) Lioness (d) Bitch **[SSC (FCI) 2012]**

103. (a) Green (b) Indigo (c) Pink (d) Violet **[NIFT (PG) 2014]**

104. (a) Debit (b) Deposit (c) Deduction (d) Withdrawal **[NIFT (PG) 2014]**

105. (a) Jupiter (b) Uranus (c) Mercury (d) Earth **[SSC (FCI) 2012]**

106. (a) Rain (b) Shower (c) Sleet (d) Raisin **[SSC (CGL) 2013]**

107. (a) Bhutan (b) Bangladesh (c) China (d) Pakistan **[SSC (10 + 2) 2013]**

108. (a) John F Kennedy (b) Abraham Lincoln (c) George Washington (d) Gerald Ford **[SSC (Constable) 2012]**

109. (a) Gun (b) Pistol (c) Dagger (d) Atom bomb **[SSC (Constable) 2012]**

110. (a) Indira Gandhi (b) Lal Bahadur Shastri (c) Jawahar Lal Nehru (d) Dr Rajendra Prasad **[SSC (Constable) 2012]**

111. (a) Head (b) Heed (c) Sledge (d) Heap **[SSC (CGL) 2013]**

112. (a) Author (b) Novelist (c) Poet (d) Publisher **[SSC (10 + 2) 2013]**

113. (a) Cheese (b) Wine (c) Milk (d) Curd **[SSC (Steno) 2013]**

114. (a) Bronze (b) Silver (c) Cadmium (d) Platinum **[SSC (Steno) 2013]**

115. (a) Herd (b) Flight (c) Hound (d) Swarm **[SSC (Steno) 2013]**

116. (a) Frequency polygon (b) Rectangle (c) Bar (d) Pi **[SSC (Steno) 2013]**

117. (a) Silicon (b) Platinum (c) Arsenic (d) Antimony **[SSC (Steno) 2013]**

118. (a) Brass (b) Gun metal (c) Bronze (d) Germanium **[SSC (Steno) 2013]**

119. (a) Wife (b) Bachelor (c) Widow (d) Spinster **[SSC (CGL) 2014]**

120. (a) Dilution (b) Distribution (c) Dispersion (d) Diversion **[SSC (CGL) 2014]**

121. (a) Quran (b) Gita (c) Panchsheel (d) Bible **[SSC (Multitasking) 2014]**

Response & Interpretations **(2.1)**

1. (*c*) All are music instruments except flute. All have string to play the music but flute does not have.

2. (*a*) All except sweetness are related with beauty but sweetness is related with taste.

3. (*c*) All others are units to measure distance.

4. (*c*) Except 'Throat', all words having four letters.

5. (*a*) All others are national holidays.

6. (*d*) All others are road vehicles.

7. (*c*) All others are fruits.

8. (*d*) All others are flowers.

9. (*a*) All others grow under soil.

10. (*b*) All others have 31 days.

11. (*c*) Except 'Chirp' all other are related to cutting. So, the odd word is chirp which means sound of birds.

12. (*b*) Only 'Dog' is different because dog does not eat grass.

13. (*b*) All others are solid metals.

14. (*b*) 'Bronze' is an alloy, rest are metals.

15. (*c*) All others are stationery.

16. (*c*) All others are worship places.

17. (*d*) All others are type of taste.

18. (*d*) All others are string instruments.

19. (*c*) All others are capital cities of Indian states.

20. (*d*) Except 'Driver', all three can make articles in their specialisation but only 'Driver' serves his work.

21. (*a*) All others are made of straight lines.

22. (*a*) Except 'Bat' all other are birds

23. (*b*) All others are three-dimensional bodies.

24. (*d*) All others are females.

25. (*c*) All others are family members.

26. (*d*) All others are primary colours.

27. (*c*) All others are Indian cities.

28. (*d*) Except 'Abundance' all mean sufficient amount but abundance is used for more than sufficient amount.

29. (*c*) All others are male gods.

30. (*b*) All others are external body parts.

31. (*b*) All others are birds while bat is a mammal.

32. (*c*) All others are precious stones.

33. (*c*) All others are fire arms.

34. (*a*) 'Orange' is the only citrus fruit.

35. (*b*) All others grow on trees, while 'Watermelon' grows on creepers.

36. (*b*) All others are capitals of the countries, while 'Melbourne' is the city of Australia.

37. (*a*) All others are the young ones of animals, while 'stag' is an adult animal.

38. (*b*) All others are female animals.

39. (*c*) Except, 'Plate', all things have holes.

40. (*a*) All others are two in number.

41. (*d*) All others are wild animals.

42. (*d*) All others are different form of cooking.

43. (*d*) All others are food items.

44. (*d*) All others fly in the day time.

45. (*c*) Except 'Model', all are same because all are made on paper.

46. (*d*) All except 'Curtain' are parts of bed-spread.

47. (*d*) Except 'Candle' all other articles have one of its ends sharp or pointed.

48. (*d*) 'Barrow' is man-driven cart whereas others are usual containers.

49. (*d*) Except 'Billiards' all others are outdoor games.

50. (*b*) Only 'Geyser' is visible whereas all others are invisible.

51. (*c*) All other things are related to the 'Church'.

52. (*d*) Except 'Equator' all others are zodiac signs.

53. (*d*) Except 'Piano' all others are string-based musical instruments.

54. (*c*) All others are apparatus to measure something.

55. (*b*) 'Whistling' is the voluntary act or process whereas others are spontaneous acts.

56. (*d*) Except 'Dog' all others are milk-yielding animals.

57. (*c*) All others are different tribes.

58. (*c*) 'Shuttle cock' is different from the other three because cricket, hockey and tennis are the name of different games.

59. (*b*) All others are string instruments.

60. (*e*) All others can be filled up with something.

61. (*c*) All others are vehicle.

62. (*d*) All others are herbivorous.

63. (*e*) All others grow above soil.

64. (*c*) We can write with pen, marker, pencil on paper. So, paper is different from others.

65. (*c*) All other terms are related to the crimes.

66. (*d*) All other terms represent the different currencies.

67. (*d*) All other items do not have hole.

68. (*a*) All except 'Raft' are drawn by animals.

69. (*a*) All other items are contained in a book.

70. (*c*) All other terms are used to denote the size.

71. (*b*) All other terms represent the season.

72. (*e*) All others are dwelling places of human being, while 'Factory' is a working place.

73. (*d*) Except 'Health' all other are different kinds of diseases.

74. (*c*) All others cover upper part of the body.

75. (*a*) All other items belong to the same class.

76. (*d*) 'Ayurveda' is the branch of medicine, all others are Vedas.

77. (*d*) Except 'Chin' all other parts are inside the mouth.

78. (*d*) 'Stream' is present in all forms given in other options.

79. (*d*) Except 'Borrow,' all the options are the terms of business.

80. (*d*) Political Science, History and Philosophy are the subjects related with humanity while Physics is a subject of Science.

81. (*a*) Except 'Gandhi' all other persons are attached with founding of religions.

82. (*b*) 'Taxi' is auto-driven whereas other items are either man or animal driven.

83. (*d*) 'Malaysia' is peninsula whereas other countries are islands.

84. (*b*) Except 'Destroy', all others are different type of moods.

85. (*d*) Except 'Plane', all items have height.

86. (*b*) All other figures enclose areas.

87. (*d*) Except 'England' all others are continents.

88. (*c*) 'Ellora' is famous for caves, all others are famous for temples.

89. (*b*) Except 'Triumph', Tri stands for three in all the other terms.

90. (*d*) Except 'Valley' all are peaks.

91. (*e*) All others are state capitals.

92. (*d*) All others can be filled up.

93. (*d*) All others are vehicles.

94. (*d*) All others are man made.

95. (*a*) Interview, test and observation are the steps to select a candidate while 'Multiplication' in a mathematical operation.

96. (*a*) Except 'Volume' all other words have two vowels. Volume has three vowels.

97. (*b*) 'Orange' is the only citrus fruit.

98. (*c*) 'Mercury' is liquid at room temperature.

99. (*d*) Except 'Driving', all activities are related to water but driving is related to road.

100. (*a*) Only 'Gallon' is different because this is use for liquid measurement.

101. (*c*) 'Dam' is different among the given alternatives as dam is used to stop the water from flowing while in spring, stream and river, water flows.

102. (*b*) 'Stag' is male while mare, lioness and bitch are female. Thus, stag is different.

103. (*c*) The colours Green, Indigo and Violet are constituents of the pattern 'VIBGYOR'. Whereas Pink is not a part of VIBGYOR.

104. (*b*) In this question, the words Debit, Deduction and Withdrawal are very much similar in the meaning, whereas Deposit is antonym of these words.

105. (*c*) Each of Jupiter, Uranus and Earth has its satellite while Mercury doesn't have its satellite. Thus, Mercury is different.

106. (*d*) Here, all options are related to rain or water except Raisin. The meaning of 'Raisin' is a partially dried grapes which is different from all others.

107. (*c*) All except China are democratic countries.

108. (*d*) Among these four persons, Gerald Ford has never been the President of America.

109. (*c*) Among all these weapons, 'Dagger' is an ancient sword, whereas all the other weapons are modern.

110. (*d*) 'Dr Rajendra Prasad' was the President of India, whereas others were the Prime Ministers.

111. (*a*) 'Head' is different from all other.

112. (*d*) Except the 'Publisher' all other are related to 'literature'.

113. (*b*) 'Wine' is alcohol while others got by animal.

114. (*a*) 'Bronze' is an alloy while silver, cadmium and platinum are the elements.

115. (*c*) Except 'Hound', all represent group.

116. (*b*) Frequency polygon, Bar and Pi are different type of graphs while 'rectangle' is a geometrical figure.

117. (*b*) Silicon, Arsenic and Antimony are metalloids while 'Platinum' is an element.

118. (*d*) Brass, Bronze and Gun metal are alloys while 'Germanium' is an element.

119. (*b*) Wife, Widow and Spinner can only be a woman. While either a man or a women can be 'Bachelor'.

120. (*a*) Except 'Dilution' all others signifies division. While Dilution is a liquid that has been diluted with liquid.

121. (*c*) Except 'Panchsheel', all are holy books of different religion.

Type 2 Choosing the Odd Pair of Words

In this type of questions certain pairs of words are given out of which the words in all the pairs except one, bear a certain common relationship. The candidate is required to decipher this relationship and choose the pair in which the words are differently related, as the answer.

Directions (Example Nos.18-21) Following are given four pairs of words out of which three are similar and hence they form a group. Find the pair which is different from other groups.

***Ex* 18** Find the odd pair of words.

(a) Horse : Neigh (b) Lion : Grunt
(c) Owl : Hoot (d) Sheep : Bleat

Sol. (*b*) All except 'Lion-Grunt' are correct match of animals and their sounds.

***Ex* 19** Find the odd pair of words.

(a) Calculator, Heater, Pen
(b) Fan, Tube-light, Television
(c) Mobile, Tempo, Cutter
(d) Axe, Radio, LCD TV

Sol. (*b*) Because all things work through electricity.

***Ex* 20** Find the odd pair of words. **[SSC (CPO) 2010]**

(a) Student : Scholar (b) Paddy : Rice
(c) Soldier : Warrior (d) Politician : Leader

Sol. (*b*) In all pairs except (b), the first, when becomes an expert is known as second.

***Ex* 21** Find the odd pair of words.

(a) Venus : Shukra (b) Uranus : Indra
(c) Mars : Mangal (d) Saturn : Budha

Sol. (*d*) In all pairs except (d), first is a planet and second is the correct Indian name of that planet.

Practice Corner 2.2

Build your Confidence...

Directions (Q. Nos. 1-59) In each of the following questions, certain pairs of words are given, out of which the words in all pairs except one, bear a certain common relationship. Choose the odd pair.

1. (a) Clerk : File (b) Lawyer : Client
(c) Doctor : Patient (d) Shopkeeper : Customer

2. (a) Seldom : Often (b) Good : Nice
(c) Honest : Cheat (d) Extravagant : Thifty

3. (a) Petrol : Car (b) Ink : Pen
(c) Garbage : Dustbin (d) Lead : Pencil
[SSC (CPO) 2009]

4. (a) Crime : Punishment (b) Judgement : Advocate
(c) Enterprise : Success (d) Exercise : Health

5. (a) Needle : Prick (b) Gun : Fire
(c) Auger : Bore (d) Chisel : Carve
[SSC (LDC) 2012]

6. (a) Lion - Roar (b) Snake - Hiss
(c) Bees - Hum (d) Frog - Bleat
(e) Dog - Bark
[IBPS (Clerk) 2011]

7. (a) Oil : Lamp (b) Water : Tap
(c) Oxygen : Life (d) Power : Machine

8. (a) Cat : Mouse (b) Lion : Deer
(c) Cow : Hen (d) Hawk : Snake

9. (a) Captain : Team (b) Boss : Gang
(c) Prime Minister : Cabinet (d) Artist : Troupe
[RRB (TC/CC) 2012]

10. (a) Hard : Soft (b) Pointed : Blunt
(c) Sweet : Sour (d) Long : High
(e) Day : Night
[LIC (AAO) 2012]

11. (a) Ice cube : Cold (b) Iron : Hard
(c) Marble : Smooth (d) Purse : Money

12. (a) Petrol : Car (b) Electricity : Television
(c) Ink : Pen (d) Dust : Vaccum cleaner
(e) Pen : Paper
[LIC (AAO) 2012]

13. (a) Man : Garage (b) Pig : Sty
(c) Horse : Stable (d) Cow : Shed

14. (a) Water : Thirst (b) Talent : Education
(c) Food : Hunger (d) Air : Suffocation

15. (a) Tree : Stem (b) Face : Eye (c) Chair : Sofa (d) Plant : Flower

16. (a) Light : Heavy (b) Crime : Blame
(c) Short : Long (d) Man : Woman **[CDS 2011]**

17. (a) Principal : School (b) Soldier : Barrack
(c) Artist : Troupe (d) Singer : Chorus

18. (a) Death : Disease (b) Milk : Butter
(c) Grape : Wine (d) Water : Oxygen

19. (a) Orange, Apple, Guava (b) Brinjal, Pomegranate, Wheat
(c) Rice, Pulses, Cotton (d) Cumin, Coriander, Millet

20. (a) Coffee, Barley, Millet
(b) Beans, Corn, Rice
(c) Cotton, Coffee, Jute
(d) Watermelon, Muskmelon, Banana

21. (a) Shirt : Dress (b) Boy : Girl
(c) Mango : Fruit (d) Table : Furniture

22. (a) Ostrich, Hen, Swan (b) Duck, Lion, Horse
(c) Zebra, Cabbage, Rose (d) India, World, Mobile

23. (a) Keyboard, Mouse, Category (b) Leveret, Cub, Elephant
(c) Yen, Pound, Currency (d) Hertz, Calorie, Watt

24. (a) Aphid : Paper (b) Moth : Wool
(c) Termite : Wood (d) Locust : Plant
[SSC (10 + 2) 2013]

25. (a) Broom : Sweep (b) Spoon : Feed
(c) Nut : Crack (d) Soap : Bathe

26. (a) Door : Bang (b) Piano : Play (c) Rain : Patter (d) Drum : Beat

27. (a) Circle : Arc (b) Line : Dot
(c) Hexagon : Angle (d) Square : Line
[SSC (10 + 2) 2013]

28. (a) Day : Night (b) Up : Down
(c) Across : Along (d) Small : Large
[SSC (10 + 2) 2013]

29. (a) Flag : Flagship (b) Court : Courtship
(c) War : Worship (d) Friend : Friendship
[SSC (10 + 2) 2013]

30. (a) Gold : Ornaments (b) Cloth : Garments
(c) Wood : Furniture (d) Leather : Footwear
(e) Earthen pots : Clay
[SBI (PO) 2009]

31. (a) Ornithology : Birds (b) Mycology : Fungi
(c) Biology : Botany (d) Phycology : Algae
(e) Entomology : Insects

32. (a) Fish : Shoal (b) Cow : Herd
(c) Sheep : Flock (d) Man : Mob
(e) Bee : Swarm

33. (a) Shoe : Leather (b) Iron : Axe
(c) Table : Wood (d) Jewellery : Gold
(e) Shirt : Fabric
[RBI (Clerk) 2013]

34. (a) Mason : Wall (b) Cobbler : Shoe
(c) Farmer : Crop (d) Chef : Cook
(e) Choreographer : Ballet

35. (a) Daring : Timid (b) Beautiful : Pretty
(c) Clear : Vague (d) Youth : Adult
(e) Native : Alien

36. (a) See : Eyes (b) Hear : Ears
(c) Smell : Nose (d) Touch : Skin
(e) Tongue : Taste
[IOB (PO) 2005]

37. (a) Bottle : Wine (b) Cup : Tea
(c) Pitcher : Water (d) Ball : Bat
(e) Inkpot : Ink

38. (a) Solder : Tin (b) Hae matite : Iron
(c) Bauxite : Aluminium (d) Malachite : Copper

39. (a) Whale : Mammal (b) Salamander : Insect
(c) Snake : Reptile (d) Frog : Amphibian

40. (a) Onomatology : Name (b) Nidology : Nests
(c) Psychology : Algae (d) Concology : Shells

41. (a) Profit : Loss (b) Wise : Foolish
(c) Virtue : Vice (d) Seduce : Attract

42. (a) Newspaper : Editor (b) Film : Director
(c) Stamps : Philatelist (d) Book : Author

43. (a) Aphid : Paper (b) Moth : Wool
(c) Termite : Wood (d) Locust : Plant

44. (a) Steel : Utensils (b) Bronze : Statue
(c) Duralumin : Aircraft (d) Iron : Rails

45. (a) Pistol : Gun (b) Knife : Dagger
(c) Engine : Train (d) Car : Bus

46. (a) Cat : Paw (b) Lizard : Pad
(c) Horse : Hoof (d) Man : Leg

47. (a) Avesta : Parsi (b) Torah : Jew
(c) Tripitaka : Buddhist (d) Temple : Hindu

48. (a) Stamp : Letter (b) Ticket : Train
(c) Ink : Pen (d) Car : Engine

49. (a) Tree : Branch (b) Hand : Finger
(c) Table : Chair (d) Room : Floor

50. (a) Taiwan : Taipei (b) China : Mongolia
(c) Iran : Teheran (d) Japan : Tokyo

51. (a) Bouquet : Flowers (b) Bunch : Grapes
(c) Furniture : Chair (d) Album : Photos

52. (a) Chaff : Wheat (b) Grit : Pulses
(c) Grain : Crop (d) Dregs : Wine

53. (a) Rice : Corn (b) Tomato : Potato
(c) Student : Class (d) Book : Library

54. (a) Ammeter : Current (b) Hygrometer : Pressure
(c) Odometer : Speed (d) Seismograph : Earthquakes

55. (a) Proteins : Marasmius (b) Sodium : Rickets
(c) Iodine : Getre (d) Iron : Anaemia

56. (a) Church : Monument (b) Car : Bus
(c) Pond : Lake (d) Pistol : Gun
[SSC (CPO) 2005]

57. (a) Door : Bang (b) Piano : Play
(c) Rain : Patter (d) Drum : Beat

58. (a) Pelican : Reptile (b) Gnu : Antelope
(c) Elk : Deer (d) Shark : Fish

59. (a) Honest : Cheat (b) Good : Nice
(c) Extravagant : Thrifty (d) Seldom : Often

Response & Interpretations **(2.2)**

1. (*a*) In all others, second is the person for whom the first works to earn money.
2. (*b*) All others are antonyms.
3. (*c*) In all others, first is required by the second for its functioning.
4. (*b*) In all others, second is the result of the first.
5. (*a*) Only this is not an instrument for action pair.
6. (*d*) Frogs don't bleat, they always croak.
7. (*b*) In all other pairs, second requires the first to continue.
8. (*c*) In all other pairs, second one is the source of food for the first one.
9. (*d*) Artist is just a part of a troupe.
10. (*d*) Except 'Long-High', all options having opposite word
11. (*d*) In all other pairs, second denotes a characteristics of the first.
12. (*d*) Except 'Dust-Vaccum cleaner', all second things in the options come in use with help of first.
13. (*a*) Except pair (a), the second word in all other pairs shows place of living of first word.
14. (*b*) In all other pairs, lack of first causes the second.
15. (*c*) In all other pairs, second is a part of the first.
16. (*b*) Except 'Crime-Blame', all three options having opposite words.
17. (*a*) In all other pairs, second is a collective group of the first.
18. (*a*) In all other pairs, second is a product obtained from the first.
19. (*a*) Option (a) is correct because all are juicy fruits.
20. (*c*) Option (c) is correct because all are related to cash crops.
21. (*b*) In all others, second denotes the class to which the first belongs.
22. (*a*) Only option (a) is correct because all are birds in that group.
23. (*d*) Only option (d) is correct because all are the units, which are related to Science.
24. (*a*) In all the others, second is damaged/eaten by the first.
25. (*c*) In all other pairs, second is the purpose for which the first is used.
26. (*b*) In all other pairs, second is the noise made by the first.
27. (*c*) Hexagon is not made from an angle.
28. (*c*) Day-Night, Up-Down and Small-Large word pairs denote the opposite relationship among them, but Across and Along are synonyms'.
29. (*c*) War and Worship are not related to each other, while all others are related to each other.
30. (*e*) In all pairs except (e), the first element is used as raw material to make the second.
31. (*c*) In all pairs except (c), first is the study of second.
32. (*d*) In all pairs except (d), second is the collective group of first.
33. (*b*) In all pairs except (b), second item is used for the manufacture of first item.
34. (*d*) In all pairs except (d), second is prepared by first.
35. (*b*) Except (b), all are antonym pairs.
36. (*e*) In all pairs except (e), first is the work of second.
37. (*d*) In all pairs except (d), first is used to contain the second.
38. (*a*) In all pairs except (a), first is the ore from which metal can be obtained and second is the name of that metal which can be obtained. On the other hand, Solder is an alloy.
39. (*b*) In all pairs except (b), first is the animal and second is the class of that animal to which it belongs.
40. (*d*) In all pairs except (d), first is known as the study of second.
42. (*c*) In all pairs except (c), second is related to first.
43. (*a*) In all pairs except (a), first is the insect and second is the thing which is damaged by that insect.
44. (*d*) In all pairs except (d), first is an alloy and second is thing which is made by that alloy. And Iron is a metal not an alloy.
45. (*c*) In all pairs except (c), both the words belong to same class.
46. (*d*) In all pairs except (d), second is the name of the foot of first.
47. (*d*) In all pairs except (d), first is the religious book that belongs to second.
48. (*d*) In all pairs except (d), first is required for second to use.
49. (*c*) In all pairs except (c), second is attached with first.
50. (*b*) In all pairs except (b), first is a name of country and second is the capital of that country.
51. (*c*) In all pairs except (c), first is known as the collection of second.
52. (*c*) In all pairs except (c), first is the wastage of second.
53. (*b*) In all pairs except (b), first is present in second.
54. (*b*) In all pairs except (b), first is the name of instrument which is used to measure the second.
55. (*b*) In all pairs except (b), deficiency of first causes the disease in second part.
56. (*a*) In all pairs except (a), both the words belongs to the same class.
57. (*b*) In all pairs except (b), second is the sound made by first.
58. (*a*) In all pairs except (a), first is a type of second.
59. (*b*) All except (b) are antonym pairs.

Type 3 Choosing the Odd Letter/Group

Under this classification, a single letter or group/pair of letters are given in each of four or five options. Three or four of them are similar to each other in same manner while one is different and this is to be chosen by the candidate as the answer.

But before moving on to the different types of letter classification, we must know the following

1. **Forward Order Letter Positions** (Left to Right)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

2. **Backward Order Letter Positions** (Right to Left)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

3. **Opposite Letters**

A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N

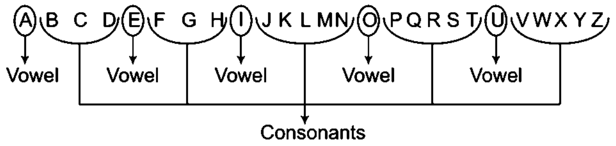
Now, we can move on to actual types of letter classification.

A. Single Letter Classification

It is of following two types

Based on Vowels and Consonants

There are 5 vowels and 21 consonants in English alphabet



Ex **22** Find the odd letter.

(a) V (b) L (c) A (d) M

Sol. (c) All except 'A' are consonants.

Based on Letter Shapes

This classification is based on shapes of different alphabets and how they are formed

(a) Letters made with straight lines

A, E, F, H, K, L, M, N, T, V, W, X, Y, Z

Letters made with one straight line = I

Letters made with two straight lines = L, T, V, X

Letters made with three straight lines = A, F, H, K, N , Y, Z

Letters made with four straight lines = E, M, W

(b) Letters made with curved lines = C, O, Q, U, S

(c) Letters made with the combination of straight and curved lines = B, D, G, J, P, R

Ex **23** Find the odd letter.

(a) T (b) D (c) R (d) J

Sol. (a) All except 'T' are made with the combination of straight and curved lines.

B. Two Letters Classification

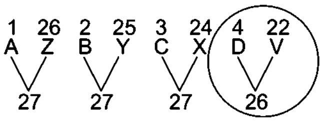
Based on Sum of Places of Two Letters

In this type of classification, the odd pair is classified based on the sum or difference of two letters in a pair.

***Ex* 24** Find out the odd pair.

(a) AZ (b) BY (c) CX (d) DV

Sol. (*d*)

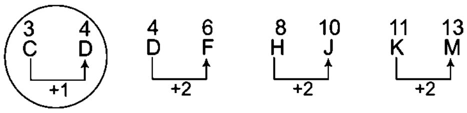

1 26 2 25 3 24 4 22
A Z B Y C X D V
27 27 27 26

So, option (d) is the correct answer.

***Ex* 25** Find the odd one.

(a) CD (b) DF (c) HJ (d) KM **[SSC (CPO) 2012]**

Sol. (*a*) All except 'CD' have a difference of one letter between them.


3 4 4 6 8 10 11 13
C D D F H J K M
+1 +2 +2 +2

C. Three Letters Classification

It is of following four types

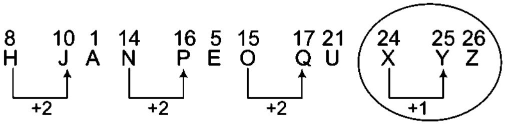
Based on Similarity of Places of First and Second Letter

Here, odd group is classified based on the similarity of places of first and second letter

***Ex* 26** Find the odd group of letters.

(a) HJA (b) NPE (c) OQU (d) XYZ **[SSC (CGL) 2009]**

Sol. (*d*) All except 'XYZ' have a difference of two positions between their first two letters.


8 10 1 14 16 5 15 17 21 24 25 26
H J A N P E O Q U X Y Z
+2 +2 +2 +1

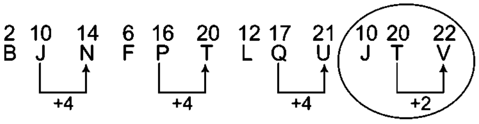
Based on Similarity of Places of Second and Third Letter

Here, odd group is classified based on the similarity of place of second and third letter

***Ex* 27** Which of the following letters group is an odd one?

(a) BJN (b) FPT (c) LQU (d) JTV

Sol. (*d*) All except 'JTV' have a difference of four positions between last two letters.


2 10 14 6 16 20 12 17 21 10 20 22
B J N F P T L Q U J T V
+4 +4 +4 +2

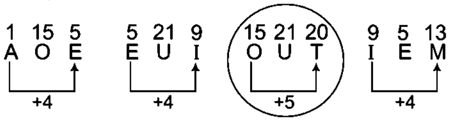
Based on Similarity of Places of First and Third Letter

In this classification the relative position of first and third letter provides the basis of classification.

***Ex* 28** Find the odd group of letters.

(a) AOE (b) EUI (c) OUT (d) IEM

Sol. (*c*) All except 'OUT' have a difference of four positions.


1 15 5 5 21 9 15 21 20 9 5 13
A O E E U I O U T I E M
+4 +4 +5 +4

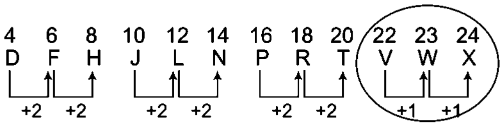
Based on Similarity of Places of All Three Letters

In this classification relative positions of all three letters are considered.

***Ex* 29** Which of the following is the odd letters group?

(a) DFH (b) JLN (c) PRT (d) VWX

Sol. (*d*) All except 'VWX'have a difference of two positions between first and second and second and third letters.


4 6 8 10 12 14 16 18 20 22 23 24
D F H J L N P R T V W X
+2 +2 +2 +2 +2 +2 +1 +1

D. Four Letters Classification

It is of following types

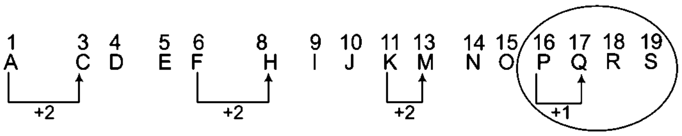
Based on Similarity of Places of First and Second Letter

In this classification, the relative position of first and second letter among the group provides the basis of classification.

***Ex* 30** Find the odd one out of the options given below. **[SSC (Steno) 2011]**

(a) ACDE (b) FHIJ (c) KMNO (d) PQRS

Sol. (*d*) All except 'PQRS' have a difference of two positions between first and second letter.


1 3 4 5 6 8 9 10 11 13 14 15 16 17 18 19
A C D E F H I J K M N O P Q R S
+2 +2 +2 +1

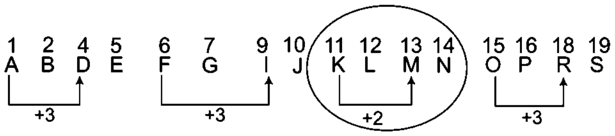
Based on Similarity of Places of First and Third Letter

In this classification relative position of first and third letter is used for classification of odd group.

***Ex* 31** Pick the odd group of letters.

(a) ABDE (b) FGIJ (c) KLMN (d) OPRS

Sol. (c) All except 'KLMN' have a difference of three positions between first and third letter.


1 2 4 5 6 7 9 10 11 12 13 14 15 16 18 19
A B D E F G I J K L M N O P R S
+3 +3 +2 +3

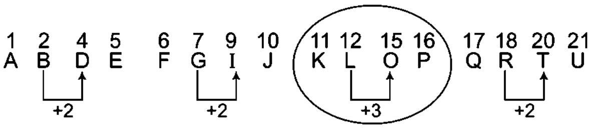
Based on Similarity of Places of Second and Third Letter

Here, relative position of second and third letter is used for classification.

***Ex* 32** Find the odd group of letters.

(a) ABDE (b) FGIJ (c) KLOP (d) QRTU

Sol. (c) All except 'KLOP' have a difference of two positions between second and third letter.


1 2 4 5 6 7 9 10 11 12 15 16 17 18 20 21
A B D E F G I J K L O P Q R T U
+2 +2 +3 +2

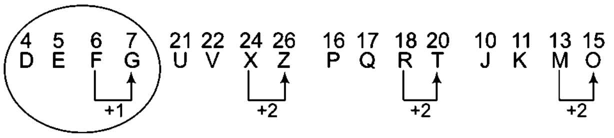
Based on Similarity of Places of Third and Fourth Letter

In this classification the odd group is found out on the basis of relative position of third and fourth letter.

Ex **33** Find out the different group of letters out of the group options.

(a) DEFG (b) UVXZ (c) PQRT (d) JKMO

Sol. (*a*) All except 'DEFG' have a difference of two positions between last two letters.



4 5 6 7 D E F G +1
21 22 24 26 U V X Z +2
16 17 18 20 P Q R T +2
10 11 13 15 J K M O +2

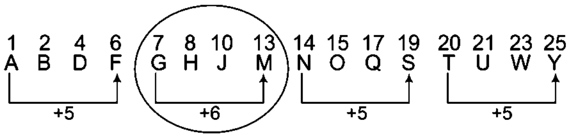
Based on Similarity of Places of First and Fourth Letter

Here, classification is done on the basis of relative position of first and fourth letter in the group.

Ex **34** Which of the following groups is an odd one? **[SSC (CPO) 2012]**

(a) ABDF (b) GHJM (c) NOQS (d) TUWY

Sol. (*b*) All except 'GHJM' have a difference of five positions between first and fourth letter.



1 2 4 6 A B D F +5
7 8 10 13 G H J M +6
14 15 17 19 N O Q S +5
20 21 23 25 T U W Y +5

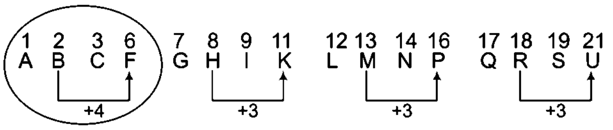
Based on Similarity of Places of Second and Fourth Letter

Here, the classification is based on similarity of position of second and fourth letter in the group.

Ex **35** Find out the odd one.

(a) ABCF (b) GHIK (c) LMNP (d) QRSU

Sol. (*a*) All except 'ABCF' have a difference of three positions between second and fourth letter.



1 2 3 6 A B C F +4
7 8 9 11 G H I K +3
12 13 14 16 L M N P +3
17 18 19 21 Q R S U +3

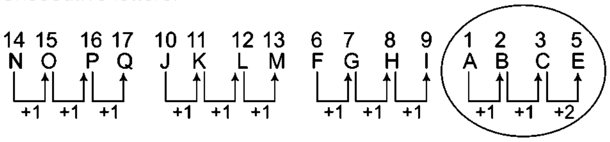
Based on Similarity of Place of All the Four Letters

Here, the relative position of all the letters is necessary for classification.

Ex **36** Find the odd one. **[SSC (Constable) 2011]**

(a) NOPQ (b) JKLM (c) FGHI (d) ABCE

Sol. (*d*) All except 'ABCE' are consecutive letters.



14 15 16 17 N O P Q +1 +1 +1
10 11 12 13 J K L M +1 +1 +1
6 7 8 9 F G H I +1 +1 +1
1 2 3 5 A B C E +1 +1 +2

Based on Opposite Letters

Here, opposite letter pairs form the basis of classification.

Ex **37** Find the odd one.

(a) LO (b) EV (c) PT (d) NM

Sol. (*c*) All except 'PT' are group of opposite letters.

Classification Based on Letters Pair/Group

In this type the classification can be on consecutive letters, opposite letter pairs etc.

Directions (Example Nos. 38-40) Choose the odd letter pair/group in each of the following questions.

***Ex* 38** (a) M-O (b) P-R (c) A-C (d) E-F

$$\begin{tikzcd} M \arrow[d, "+2"'] & A \arrow[d, "+2"'] & P \arrow[d, "+2"'] & E \arrow[d, "+2"'] \\ O & C & R & G \end{tikzcd}$$

Sol. (*d*) In all other options, second letter is obtained from first letter after addition of 2.

***Ex* 39** (a) MN-NM (b) BY-DW (c) CX-DW (d) JQ-KP

Sol. (*b*) Except option (b) all other pair of letters having opposite consecutive letters.

***Ex* 40** (a) CDE-FGH (b) WXY-ZYX (c) LMN-OPQ (d) TUV-WXY **[SSC (CGL) 2009]**

Sol. (*b*) Except option (b), all having consecutive letters in the pair.

E. Miscellaneous

Based on Number of Letters

In this classification a group having different number of letters from others is classified as the odd group.

***Ex* 41** Which of the following option is an odd one?

(a) PQRS (b) LMNOP (c) BCDE (d) IJKL

Sol. (*b*) All except 'LMNOP' have only four consecutive letters.

Based on Number of Small and Capital Letters

In this classification, odd group is that group which does not follow the sequence of small and capital letters.

***Ex* 42** Take out the odd one.

(a) TuvL (b) IJKL (c) EfgH (d) PqrS

Sol. (*b*) All except 'IJKL' have two small and two capital letters.

Based on Place of Small and Capital Letters

This classification is simply based on the places of capital and small letters.

***Ex* 43** Find out the odd one.

(a) TuvW (b) IjkL (c) EfgH (d) PSqr

Sol. (*d*) All except 'PSqr' have capital letters at first and fourth place.

Based on Presence or Non-presence of Vowels

In this type, absence or presence of vowels is used as a base for classification.

***Ex* 44** Find out the odd one.

(a) TGEP (b) UNDS (c) BXFM (d) NHKO

Sol. (c) Option (c) is correct as except 'BXFM' have atleast one vowels.

Based on Equality of Number of Vowels

Here, number of vowels present in a group serves as the basis of classifying the odd group out.

***Ex* 45** Which of the following is an odd letter group? **[SSC (10 + 2) 2010]**

(a) EBCDA (b) GFHIJ (c) KOLNM (d) QRSTU

Sol. (*a*) All except 'EBCDA' have only one vowel.

Based on Meaningful and Non-meaningful Words

Here, odd group is classified on the basis that either they are meaningful words or not.

***Ex* 46** Find out the odd one.

(a) DEAR (b) NEAR (c) BEAR (d) KEAR

Sol. (*d*) All except 'KEAR' are meaningful words.

➘ Apart from all the given patterns of letter classification, students may be ready to face some surprising patterns.

Practice Corner **2.3**

Build your Confidence...

Directions (Q. Nos. 1-61) In each of the following questions, some groups of letters are given, all of which except one, share a common similarity while one is different. Select the odd one.

1. (a) I (b) J (c) K (d) L
[SSC (Constable) 2012]

2. (a) A (b) E (c) M (d) I

3. (a) S (b) M (c) Q (d) U

4. (a) O (b) I (c) E (d) B
[SSC (CGL) April 2014]

5. (a) ACE (b) FHJ (c) KLN (d) NPR

6. (a) BDH (b) CFL (c) EJU (d) DHP
[SSC (10+2) 2010]

7. (a) ADGPT (b) ACERK (c) ABDEQ (d) ADIPY

8. (a) MKHE (b) MIDA (c) KHEB (d) WTQN

9. (a) YXVU (b) ORQP (c) KJHG (d) MLJI
[Delhi Police (SI) 2010]

10. (a) EHG (b) JML (c) PSR (d) UYX

11. (a) KJG (b) ZYV (c) NMK (d) FEB

12. (a) CDFE (b) JKLM (c) STVU (d) WXZY (e) HIKJ
[LIC (ADO) 2012]

13. (a) XWU (b) QPM (c) KJH (d) DCA

14. (a) CAE (b) KGM (c) NLP (d) YWA

15. (a) NKMJ (b) FCEB (c) URTQ (d) TQRP

16. (a) BCDE (b) JKLM (c) STVU (d) WXYZ
[IB (ACIO) 2012]

17. (a) J30T (b) D22R (c) H26R (d) A28Z

18. (a) ZYW (b) SQN (c) GEB (d) MKH

19. (a) dcba (b) zyxw (c) srpq (d) hgfe
[SSC (Multitasking) 2014]

20. (a) YWU (b) NL J (c) KIF (d) VTR

21. (a) TWXZ (b) ADEG (c) EHIK (d) LNOQ
[SSC (10+2) 2013]

22. (a) GDFE (b) QMPO (c) TQSR (d) CZBA

23. (a) DEGJ (b) QRTW (c) JKNQ (d) YZBE

24. (a) BD (b) CE (c) GI (d) FH (e) NL
[Canara Bank (PO) 2008]

25. (a) BD (b) KM (c) HK (d) PR (e) TV
[SBI (PO) 2010]

26. (a) CE (b) KI (c) FD (d) WU (e) MK
[IBPS (Clerk) 2011]

27. (a) HJ (b) PR (c) NP (d) BE (e) VX
[UCO Bank (PO) 2009]

28. (a) ZYAB (b) TSGH (c) ONLM (d) UTFH

29. (a) ELS (b) HOV (c) CJQ (d) KRX

30. (a) BEA (b) PSO (c) WZV (d) RTQ

31. (a) GDF (b) VRT (c) KHJ (d) NKM

32. (a) DACB (b) EBCD (c) SPQR (d) XUVM
[SSC (CPO) 2013]

33. (a) MOR (b) GIL (c) SUX (d) VXZ

34. (a) HKI (b) UXV (c) CFD (d) MQN

35. (a) BdEg (b) PrSu (c) KmNp (d) TwXz

36. (a) CdaB (b) VwtU (c) LmjK (d) RsqP

37. (a) MrW (b) ChN (c) KpU (d) BgL

38. (a) DOG (b) DIN (c) OUT (d) FED (e) JOT
[SBI (Clerk) 2010]

39. (a) JKL (b) GHI (c) OPQ (d) ILT (e) MNO
[UCO Bank (PO) 2011]

40. (a) CJQ (b) AGA (c) HOV (d) ELS (e) KRY
[IDBI (Clerk) 2011]

41. (a) JIHG (b) RQPO (c) WXUV (d) UTSR (e) NMLK
[Punjab & Sind Bank (PO) 2011]

42. (a) RTVX (b) NPRT (c) GHJL (d) MOQS (e) ACEG
[Punjab & Sind Bank (PO) 2011]

43. (a) L JHN (b) FDBH (c) SQOU (d) PNKR

44. (a) BJLQ (b) TPDC (c) BKDF (d) OLTF
[SSC (CGL) April 2014]

45. (a) DFHB (b) KMOJ (c) PRTN (d) XZBV

46. (a) JKMP (b) GHJM (c) WXZC (d) STWZ

47. (a) RNMQ (b) GDCF (c) LIHK (d) TQPS

48. (a) FIJL (b) RUVX (c) DGHJ (d) NPQS
[SSC (Multitasking) 2014]

49. (a) PNL J (b) VTRP (c) JHFD (d) TQOM **[Delhi Police (SI) 2010]**

50. (a) EHGC (b) CEFA (c) MPOK (d) SVUQ

51. (a) RKD (b) UNG (c) MTF (d) SLE **[SSC (CGL) 2013]**

52. (a) DAH (b) IFM (c) ROV (d) QNT **[SSC (10+2) 2013]**

53. (a) PQO (b) AZY (c) TWS (d) VBU **[SSC (10+2) 2013]**

54. (a) GDA (b) OLI (c) VSP (d) WYZ **[SSC (10+2) 2013]**

55. (a) ABDG (b) CDFI (c) EFHK (d) GHJK (e) HIKN **[IBPS (Clerk) 2011]**

56. (a) ABYZ (b) CDWX (c) EFUV (d) GHTV **[RRB (ASM) 2012]**

57. (a) MORV (b) CEHL (c) CENT (d) JLOS **[SSC (CGL) 2013]**

58. (a) HJN (b) JLP (c) PRU (d) QSW (e) ACG **[PNB (Clerk) 2011]**

59. (a) BEG (b) KNP (c) WZB (d) JLN (e) DGI **[LIC (ADO) 2011]**

60. (a) LNJ (b) RTP (c) NPK (d) FHD (e) WYU **[LIC (ADO) 2012]**

61. (a) GT7 (b) IR9 (c) CX3 (d) JP10 **[IB (ACIO) 2012]**

Directions (Q. Nos 62-63) Choose the odd letter pair/group in each of the following questions.

62. (a) B–F (b) J–N (c) M–Q (d) T–U

63. (a) E–J–O–T (b) C–F–I–L (c) B–D–F–H (d) A–B–E–F

Response & Interpretations (2.3)

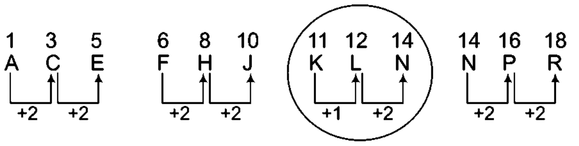
1. (*a*) All others are consonants.

2. (*c*) All others are vowels.

3. (*b*) All others are made of curved lines.

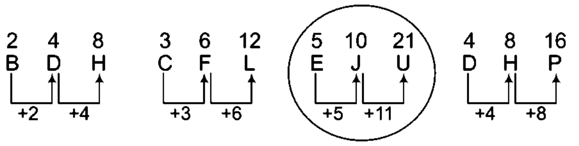
4. (*d*) Except B, all are the vowels.

5. (*c*)


1 3 5
A C E
+2 +2
6 8 10
F H J
+2 +2
11 12 14
K L N
+1 +2
14 16 18
N P R
+2 +2

All except 'KLN' have a difference of two positions between first and second, second and third.

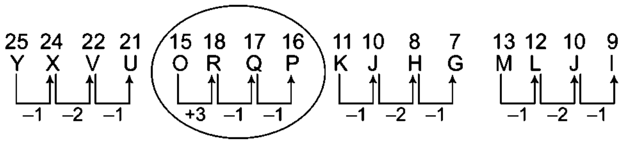
6. (*c*) Clearly, 'EJU' is different from the other options because the second difference is twice the first difference.


2 4 8
B D H
+2 +4
3 6 12
C F L
+3 +6
5 10 21
E J U
+5 +11
4 8 16
D H P
+4 +8

7. (*a*) All others have two vowels.

8. (*b*) The pattern used for classification is placement of alphabets in the order (– 3, – 3, – 3). Since, option (b) does not follow the pattern, it is odd in the group.

9. (*b*) Except ORQP all others have the same gap between the adjacent letters.

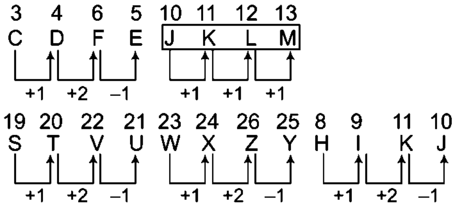

25 24 22 21
Y X V U
–1 –2 –1
15 18 17 16
O R Q P
+3 –1 –1
11 10 8 7
K J H G
–1 –2 –1
13 12 10 9
M L J I
–1 –2 –1

Clearly, ORQP is different from other options.

10. (*d*) In all other groups, there is a gap of one letter between first and third letters.

11. (*c*) In all other groups, there is a gap of two letters as in the alphabet between the second and the third letters.

12. (*b*)


3 4 6 5
C D F E
+1 +2 –1
10 11 12 13
J K L M
+1 +1 +1
19 20 22 21
S T V U
+1 +2 –1
23 24 26 25
W X Z Y
+1 +2 –1
8 9 11 10
H I K J
+1 +2 –1

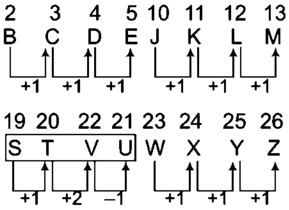
Clearly, 'JKLM' is different from the others.

13. (*b*) In all other groups, there is a gap of one letter as in the alphabet between second and third letters.

14. (*b*) In all other groups, there is a gap of one letter as in the alphabet between first and second letters.

15. (*d*) In all other groups, there is a gap of two letters as in the alphabet between third and fourth letters.

16. (*c*)

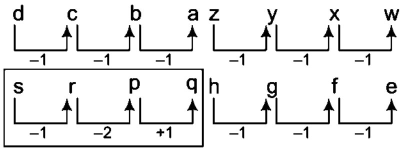

2 3 4 5
B C D E
+1 +1 +1
10 11 12 13
J K L M
+1 +1 +1
19 20 22 21
S T V U
+1 +2 –1
23 24 25 26
W X Y Z
+1 +1 +1

Therefore, STVU is different because other options have consecutive letters.

17. (*d*) In all other groups, number in between is the sum of positions of both letters in the alphabet.

18. (*a*) In all other groups, there is a gap of two letters as in the alphabet between second and third letters.

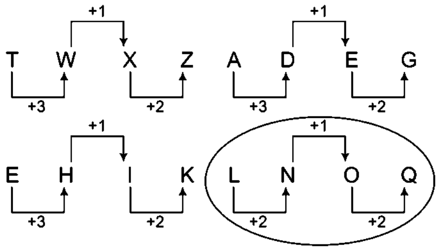
19. (*c*)


d c b a z y x w
−1 −1 −1 −1 −1 −1
s r p q h g f e
−1 −2 +1 −1 −1 −1

Clearly, 'srpq' is different from the others.

20. (*c*) In all other groups of letters, there is a gap of one letter as in the alphabet between second and third letters.

21. (*d*)

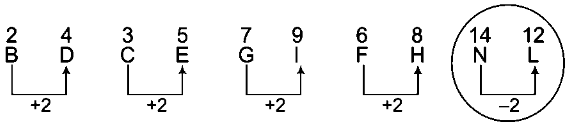

+1 +1
T W X Z A D E G
+3 +2 +3 +2
+1 +1
E H I K L N O Q
+3 +2 +2 +2

Hence, option (d) is the answer.

22. (*b*) In all other groups of letters, there is a gap of one letter as in the alphabet between second and third letters.

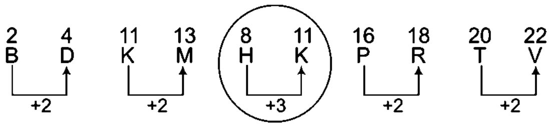
23. (*c*) In all other groups of letters, there is no gap between first and second letters, gap of one letter between second and third letters, gap of two letters between third and fourth letters.

24. (*e*)


2 4 3 5 7 9 6 8 14 12
B D C E G I F H N L
+2 +2 +2 +2 −2

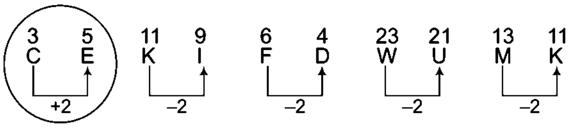
Clearly, option (e) is different from others.

25. (*c*)


2 4 11 13 8 11 16 18 20 22
B D K M H K P R T V
+2 +2 +3 +2 +2

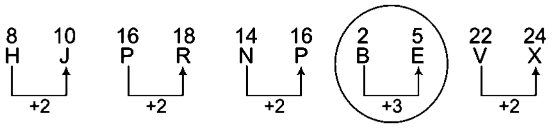
So, option (c) is different from others.

26. (*a*)


3 5 11 9 6 4 23 21 13 11
C E K I F D W U M K
+2 −2 −2 −2 −2

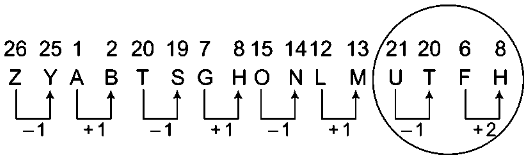
Now, it is clear that all options, except option (a), follow the same gaping.

27. (*d*)


8 10 16 18 14 16 2 5 22 24
H J P R N P B E V X
+2 +2 +2 +3 +2

Therefore, BE is different from others.

28. (*d*)


26 25 1 2 20 19 7 8 15 14 12 13 21 20 6 8
Z Y A B T S G H O N L M U T F H
−1 +1 −1 +1 −1 +1 −1 +2

Clearly, option (d) is different from others.

29. (*d*) In all other groups, letters adjacent to the middle one are equidistant from it in the alphabet.

30. (*d*) In all other groups, there is a gap of two letters between first and second letters as in the alphabet.

31. (*b*) In all other groups, first and third letters are the consecutive letters of the alphabet.

32. (*a*)

$$\mathrm{D} \xrightarrow{-3} \mathrm{A} \xrightarrow{+2} \mathrm{C} \xrightarrow{-1} \mathrm{B}$$

$$\mathrm{E} \xrightarrow{-3} \mathrm{B} \xrightarrow{+1} \mathrm{C} \xrightarrow{+1} \mathrm{D}$$

$$\mathrm{S} \xrightarrow{-3} \mathrm{P} \xrightarrow{+1} \mathrm{Q} \xrightarrow{+1} \mathrm{R}$$

$$\mathrm{X} \xrightarrow{-3} \mathrm{U} \xrightarrow{+1} \mathrm{V} \xrightarrow{+1} \mathrm{W}$$

33. (*d*) In all other groups, there is a gap of two letters between second and third letters as in the alphabet.

34. (*d*) In all other groups, there is a gap of one letter between second and third letters as in the alphabet.

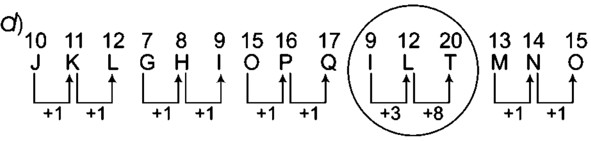
35. (*d*) In all other groups, there is a gap of one letter between first and second letters as in the alphabet.

36. (*d*) In all other groups, third and fourth letters are consecutive alphabet.

37. (*b*) In all other groups, first and third letters are equidistant from the middle letter as in the original alphabet.

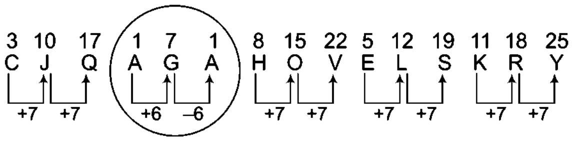
38. (*c*) All others have only one vowel.

39. (*d*)


10 11 12 7 8 9 15 16 17 9 12 20 13 14 15
J K L G H I O P Q I L T M N O
+1 +1 +1 +1 +1 +1 +3 +8 +1 +1

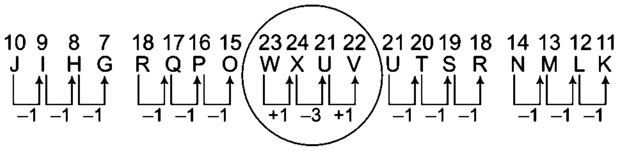
So, 'ILT' is different because other options have consecutive letters.

40. (*b*)


3 10 17 1 7 1 8 15 22 5 12 19 11 18 25
C J Q A G A H O V E L S K R Y
+7 +7 +6 −6 +7 +7 +7 +7 +7 +7

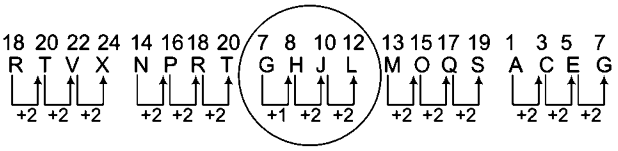
Clearly, AGA is different from other four.

41. (*c*)


10 9 8 7 18 17 16 15 23 24 21 22 21 20 19 18 14 13 12 11
J I H G R Q P O W X U V U T S R N M L K
−1 −1 −1 −1 −1 −1 +1 −3 +1 −1 −1 −1 −1 −1 −1

So, 'WXUV' is following different pattern from others.

42. (*c*)


18 20 22 24 14 16 18 20 7 8 10 12 13 15 17 19 1 3 5 7
R T V X N P R T G H J L M O Q S A C E G
+2 +2 +2 +2 +2 +2 +1 +2 +2 +2 +2 +2 +2 +2 +2

Clearly, option (c) is different from other options.

43. (*d*) In all other groups of letters, there is a gap of one letter between second and third letter as in the alphabet.

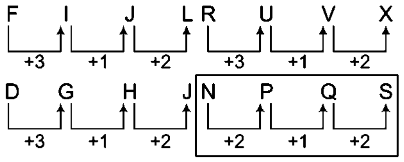
44. (*d*) Except OLTF, none of the groups of letters has any vowel.

45. (*b*) In all other groups, there is a gap of one letters as in the alphabet between first and fourth letters.

46. (*d*) In all other groups, there is a gap of one letter as in the alphabet between second and third letters.

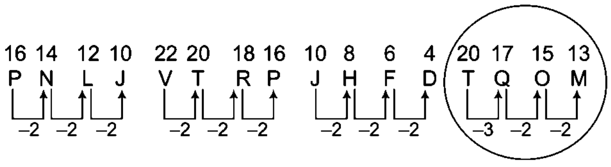
47. (*a*) In all other groups, there is a gap of one letter as in the original alphabet between second and fourth letters.

48. (*d*) The pattern of the question is,


F I J L R U V X
+3 +1 +2 +3 +1 +2
D G H J N P Q S
+3 +1 +2 +2 +1 +2

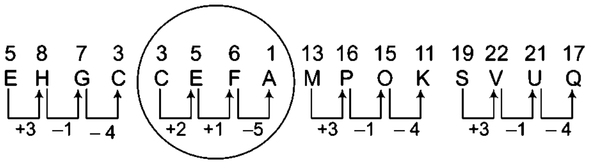
Clearly, option (d) is different from the others.

49. (*d*)


16 14 12 10 22 20 18 16 10 8 6 4 20 17 15 13
P N L J V T R P J H F D T Q O M
−2 −2 −2 −2 −2 −2 −2 −2 −2 −3 −2 −2

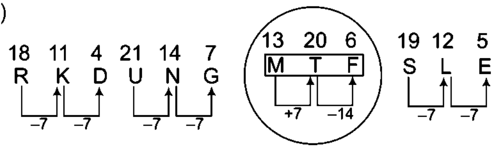
Hence, except option (d) all are following same rule of gap.

50. (*b*)


5 8 7 3 3 5 6 1 13 16 15 11 19 22 21 17
E H G C C E F A M P O K S V U Q
+3 −1 −4 +2 +1 −5 +3 −1 −4 +3 −1 −4

Clearly, option (b) is different from other three.

51. (*c*)


18 11 4 21 14 7 13 20 6 19 12 5
R K D U N G M T F S L E
−7 −7 −7 −7 +7 −14 −7 −7

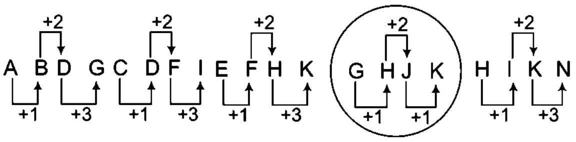
From above, it is clear that MTF is different from all others.

52. (*d*) In all other groups, first letter is 3 steps ahead of the second and third letters is 4 steps ahead of the first.

53. (*b*) In all other groups, the third and first letters are in alphabetical order.

54. (*d*) In all other groups, the second and first letters are three steps ahead of third and second letters, respectively.

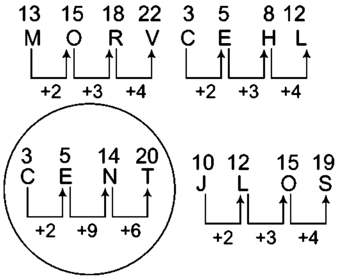
55. (*d*)


+2 +2 +2 +2 +2
A B D G C D F I E F H K G H J K H I K N
+1 +3 +1 +3 +1 +3 +1 +1 +1 +3

Therefore, GHJK is different from the other three.

56. (*d*) Except (d), all three are same because in those three options first and fourth, second and third are opposite letters.

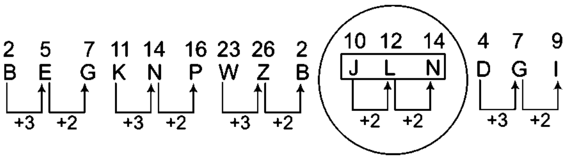
57. (*c*)


13 15 18 22 3 5 8 12
M O R V C E H L
+2 +3 +4 +2 +3 +4
3 5 14 20 10 12 15 19
C E N T J L O S
+2 +9 +6 +2 +3 +4

From above, it is clear that word 'CENT' is different from all others.

58. (*c*) Except 'PRU', all others having same gap but 'PRU' is not following the same rule.

59. (*d*)


2 5 7 11 14 16 23 26 2 10 12 14 4 7 9
B E G K N P W Z B J L N D G I
+3 +2 +3 +2 +3 +2 +2 +2 +3 +2

60. (*c*) In all other groups, there is a gap of one letter as in the alphabet between first and third letters.

61. (*d*) Except option (d), sum of all other letters given is equal to 27. And given number represents the position of Ist letter.

62. (*d*) Except option (d), all letters in pairs having difference of four.

63. (*d*) Except option (d), all letters in options having same difference among them.

Type 4 Choosing the Odd Number/Pair/Group

In this type of questions, certain pairs/groups of numbers are given out of which all except one may have the same property or may be related to each other according to the same rule. The candidate is required to choose the odd pair/group.

Let us see the types of number classifications

A. Classification Based on Even Numbers

The natural numbers exactly divisible by 2 (leaving no remainder) are called even numbers, *e.g.*, 2, 4, 6, 8, 10, 14 etc.

Ex **47** Find the number different to others.

(a) 1444 (b) 1553 (c) 8590 (d) 1984

Sol. (*b*) All except '1553' are even numbers.

B. Classification Based on Odd Numbers

The natural numbers not exactly divisible by 2 are called odd numbers, *e.g.*, 1, 3, 5, 7, 9, 11, 13, …

***Ex* 48** Find the odd one out of the given options.

(a) 145 (b) 158 (c) 151 (d) 143

Sol. (*b*) All except '158' are odd numbers.

C. Classification Based on Prime Numbers

The natural numbers greater than one and divisible by 1 and itself only, are called prime numbers.

***Ex* 49** Find out the odd one. **[SSC (10 + 2) 2008]**

(a) 19 (b) 17 (c) 13 (d) 12

Sol. (*d*) All except '12' are prime numbers.

D. Classification Based on Non-Prime (Composite) Numbers

Non-prime (composite) numbers are exactly divisible by 1, itself and other numbers. *e.g.*, 4, 6, 8, 10, 12 , 14, 15, …

***Ex* 50** Find the number different from others.

(a) 345 (b) 133 (c) 225 (d) 216

Sol. (*b*) All except '133' are non-prime numbers.

E. Classification Based on Squares

When a number is multiplied by itself, then the number obtained is called the square of that particular number.

e.g., Square of 2 = $2 \times 2 = 4$, Square of 3 = $3 \times 3 = 9$, Square of 4 = $4 \times 4 = 16$

***Ex* 51** Find the odd one out of the numbers given below. **[SSC (CPO) 2011]**

(a) 100 (b) 9 (c) 225 (d) 120

Sol. (*d*) All except '120' are squares of natural numbers.

F. Classification Based on Cubes of Numbers

When a number is multiplied two times with itself, then the number obtained is called the cube of that particular number.

e.g., Cube of 2 = $2 \times 2 \times 2 = 8$, Cube of 3 = $3 \times 3 \times 3 = 27$, Cube of 4 = $4 \times 4 \times 4 = 64$

***Ex* 52** Find the odd one.

(a) 216 (b) 33 (c) 8 (d) 64

Sol. (*b*) All except '33' are cubes of natural numbers.

G. Classification Based on Divisibility/Multiplication

When all numbers are divisible/multiple of a particular number except one.

***Ex* 53** Find the odd one.

(a) 75 (b) 45 (c) 25 (d) 15

Sol. (c) All except '25' are divisible by 3.

***Ex* 54** Find the odd one.

(a) 40 (b) 20 (c) 30 (d) 33

Sol. (*d*) Except (d) all numbers are multiple of 10.

H. Classification Based on Increasing/Decreasing Order of Digits

When the sequence of digits in options are given in increasing/decreasing order.

***Ex* 55** Take out the odd one.

(a) 456 (b) 234 (c) 123 (d) 312

Sol. (*d*) All except '312' are in increasing order of digits.

***Ex* 56** Find the odd one. **[SSC (CGL) 2009]**

(a) 345 (b) 321 (c) 876 (d) 654

Sol. (*a*) All except '345' are in decreasing order of digits.

I. Classification Based on Addition of Digits

When the sum of all the digits are equal

***Ex* 57** Find the odd one. **[MAT 2009]**

(a) 345 (b) 821 (c) 236 (d) 182

Sol. (*a*) All except '345', have sum of digits is equal to 11.

$345 = 3 + 4 + 5 = 12$; $821 = 8 + 2 + 1 = 11$

$236 = 2 + 3 + 6 = 11$; $182 = 1 + 8 + 2 = 11$

➘ Such classification can also be based on subtraction/multiplication/division of digits.

J. Classification Based on Pair or Group of Digits/Numbers

The pair can consists of numbers with same difference, one is multiple of other etc.

Directions (Example Nos. 58-59) In the following questions, four pairs of numbers are given, which all except one are similar in some manner and hence they form a group. You have to find the pair which is different and therefore discarded from the group of similar pair.

***Ex* 58** (a) 4-16 (b) 3-12 (c) 7-28 (d) 5-15

Sol. (*d*) All except '5-15' have the second number four times the first number.

***Ex* 59** (a) 22-12 (b) 32-22 (c) 62-22 (d) 52-42

Sol. (c) Except option (c) in each pair, the second number is ten less than the first number.

K. Classification Based on Group of Three Numbers

Three different numbers form a group possessing some common property.

***Ex* 60** (a) 25, 50, 56 (b) 20, 40, 46 (c) 18, 36, 40 (d) 12, 24, 30

Sol. (c) All except '18, 36, 40' have second number double the first number and third number 6 more than the second number.

Practice Corner **2.4**

Build your Confidence...

Directions (Q. Nos. 1-40) In each of the following questions, four/five options are given. Out of these, three/four are alike in a particular way but remaining one is different. Find the odd one from the given options which is different from others.

1. (a) 25 (b) 9 (c) 16 (d) 18
[SSC (Multitasking) 2013]

2. (a) 4867 (b) 5555 (c) 6243 (d) 6655
[SSC (CPO) 2013]

3. (a) 4 (b) 64 (c) 225 (d) 47

4. (a) 13 (b) 17 (c) 19 (d) 27

5. (a) 13 (b) 43 (c) 63 (d) 23 (e) 53
[SBI (Clerk) 2011]

6. (a) 12 (b) 24 (c) 42 (d) 18 (e) 32
[IBPS (Clerk) 2011]

7. (a) 12 (b) 28 (c) 52 (d) 68 (e) 96
[Syndicate Bank (PO) 2009]

8. (a) 26 (b) 34 (c) 72 (d) 46 (e) 38
[SBI (PO) 2009]

9. (a) 11 (b) 17 (c) 45 (d) 37

10. (a) 729 (b) 123 (c) 423 (d) 621
[SSC (Steno) 2013]

11. (a) 121 (b) 88 (c) 97 (d) 132
[SSC (CGL) April 2014]

12. (a) 15 (b) 27 (c) 37 (d) 39
[SSC (Constable) 2010]

13. (a) 16 (b) 25 (c) 35 (d) 49
[Delhi Police SI 2010]

14. (a) 21 (b) 55 (c) 63 (d) 49
[RRB (ASM) 2010]

15. (a) 11 (b) 8 (c) 14 (d) 66

16. (a) 68 (b) 88 (c) 102 (d) 238

17. (a) 30 (b) 18 (c) 24 (d) 26
[RRB (ASM) 2011]

18. (a) 43 (b) 53 (c) 63 (d) 73

19. (a) 26 (b) 124 (c) 728 (d) 64

20. (a) 49 (b) 140 (c) 112 (d) 97
[SSC (10 + 2) 2010]

21. (a) 121 (b) 169 (c) 225 (d) 289
[SSC (CPO) 2010]

22. (a) 119 (b) 154 (c) 85 (d) 51
[SSC (CPO) 2010]

23. (a) 64 (b) 208 (c) 316 (d) 118
[SSC (10 + 2) 2010]

24. (a) 143 (b) 171 (c) 117 (d) 195

25. (a) 17 (b) 44 (c) 29 (d) 13
[SSS (Steno) 2013]

26. (a) 63 (b) 126 (c) 215 (d) 342

27. (a) 272 (b) 210 (c) 240 (d) 304
[SSC (CGL) 2013]

28. (a) 144 (b) 169 (c) 288 (d) 324
[IBPS (Clerk) 2011]

29. (a) 120 (b) 72 (c) 108 (d) 98

30. (a) 28 (b) 42 (c) 35 (d) 21 (e) 65
[BOI (PO) 2009]

31. (a) 115 (b) 145 (c) 195 (d) 155 (e) 75
[Canara Bank (PO) 2010]

32. (a) 120 (b) 6 (c) 24 (d) 64
[SSC (CGL) April 2014]

33. (a) 73 (b) 53 (c) 87 (d) 67
[RRB (Group 'D') 2011]

34. (a) 426 (b) 369 (c) 279 (d) 159 (e) 819
[SBI (PO) 2009]

35. (a) 215 (b) 143 (c) 247 (d) 91 (e) 65
[BOI (PO) 2009]

36. (a) 626 (b) 841 (c) 962 (d) 1090
[UP B. Ed. 2011]

37. (a) 488 (b) 929 (c) 776 (d) 667

38. (a) 3216 (b) 2338 (c) 3205 (d) 2015
[CDS 2011]

39. (a) 572 (b) 671 (c) 264 (d) 427

40. (a) 144 (b) 169 (c) 196 (d) 210

Directions (Q. Nos. 41-67) Choose the odd numbers pair/group in each of the following questions.

41. (a) 72572 (b) 35453 (c) 78378 (d) 46246 **[SSC (CPO) 2008]**

42. (a) 46, 57 (b) 38, 49 (c) 41, 52 (d) 64, 73 **[SSC (10+2) 2013]**

43. (a) 18-22 (b) 11-13 (c) 12-14 (d) 17-19 **[SSC (CPO) 2011]**

44. (a) 20-36 (b) 30-36 (c) 50-56 (d) 60-66 **[SSC (CPO) 2010]**

45. (a) 117-39 (b) 164-41 (c) 198-66 (d) 213-71

46. (a) 8 - 11 (b) 1 - 4 (c) 7 - 10 (d) 3 - 5 **[SSC (Multitasking) 2014]**

47. (a) 25631 (b) 33442 (c) 34424 (d) 52163 **[SSC (10+2) 2013]**

48. (a) 23-29 (b) 19-25 (c) 13-17 (d) 3-5 **[SSC (10+ 2) 2013]**

49. (a) 18, 45 (b) 23,14 (c) 29, 82 (d) 36,27 **[SSC (10+2) 2013]**

50. (a) 5-2 (b) 19-16 (c) 27-23 (d) 31-28 **[SSC (Multitasking) 2014]**

51. (a) 1 : 4 (b) 10 : 24 (c) 8 : 18 (d) 22 : 46

52. (a) 5 : 9 (b) 7 : 11 (c) 13 : 17 (d) 29 : 31

53. (a) 147 : 741 (b) 253 : 352 (c) 518 : 816 (d) 303 : 303

54. (a) 22 : 44 (b) 45 : 1625 (c) 18 : 164 (d) 24 : 464

55. (a) 22 : 0 (b) 24 : 12 (c) 23 : 5 (d) 24 : 18

56. (a) 5-21 (b) 29-45 (c) 48-68 (d) 71-87 **[SSC (10+2) 2013]**

57. (a) 25, 36 (b) 9, 64 (c) 100, 121 (d) 144, 169

58. (a) 286, 628 (b) 397, 739 (c) 475, 574 (d) 369, 936

59. (a) 919, 949 (b) 646, 686 (c) 828, 848 (d) 434, 464 **[NDA 2011]**

60. (a) 83-75 (b) 58-50
(c) 49-42 (d) 25-17 **[SSC (CPO) 2011]**

61. (a) 8-15 (b) 25-36
(c) 49-64 (d) 81-100 **[SSC (10+2) 2013]**

62. (a) 9, 49 (b) 13, 121
(c) 10, 61 (d) 7, 25 **[SSC (CPO) 2013]**

63. (a) 77, 70, 49, 56 (b) 56, 64, 96, 48
(c) 66, 44, 23, 60 (d) 21, 27, 63, 84

64. (a) 14, 17, 23 (b) 19, 22, 28
(c) 17, 20, 26 (d) 21, 23, 30 **[SSC (Steno) 2013]**

65. (a) 2-4-8 (b) 4-16-32
(c) 3-9-27 (d) 5-25-125

66. (a) 11, 17, 23 (b) 12, 14, 16
(c) 8, 10, 12 (d) 18, 36, 72

67. (a) 3-4-14 (b) 56-57-67
(c) 102-103-113 (d) 22-23-13

Response & Interpretations (2.4)

1. (*d*) All except '18' are square of natural numbers.
$(5)^2 = 25, (3)^2 = 9, (4)^2 = 16$

2. (*d*) $4867 \rightarrow 4 + 8 + 6 + 7 = 25$, which is divisible by 5.
$5555 \rightarrow 5 + 5 + 5 + 5 = 20$, which is divisible by 5.
$6243 \rightarrow 6 + 2 + 4 + 3 = 15$, which is divisible by 5.
$6655 \rightarrow 6 + 6 + 5 + 5 = 22$, which is not divisible by 5.

3. (*d*) All others are complete squares.

4. (*d*) All others are prime numbers.

5. (*c*) All others are prime numbers.

6. (*e*) All others are divisible by 3.

7. (*e*) All others have only 3 factors.
$12 = 2 \times 2 \times 3$, $28 = 2 \times 2 \times 7$, $52 = 2 \times 2 \times 13$
$68 = 2 \times 2 \times 17$, $96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$

8. (*c*) All others have only 2 factors with prime numbers.
$26 = 2 \times 13$, $34 = 2 \times 17$, $72 = 2 \times 2 \times 2 \times 3 \times 3$,
$46 = 2 \times 23$, $38 = 2 \times 19$

9. (*c*) All others are prime numbers.

10. (*a*) Only '729' is a perfect cube.

11. (*c*) Except '97', all are divisible by 11.

12. (*c*) This is the only prime number in the group.

13. (*c*) This is the only non-square number in the group.

14. (*d*) This is the only complete square in the group.

15. (*a*) This is the only prime number in the group.

16. (*b*) All others are divisible by 17.

17. (*d*) All others are divisible by 6.

18. (*c*) All others are prime numbers.

19. (*d*) All other numbers are one less than the cube of natural numbers.

20. (*a*) This is the only square in the group.

21. (*c*) All others are squares of prime numbers.

22. (*b*) All others are divisible by 17.

23. (*a*) This is the only square in the group.

24. (*b*) All others are divisible by 13.

25. (*b*) Except '44', all are prime numbers.

26. (*b*) All others are one less than the cube of a number.

27. (*c*) ∴ 272 = 2 + 7 + 2 = 11

210 = 2 + 1 + 0 = 3

240 = 2 + 4 + 0 = 6

304 = 3 + 0 + 4 = 7

The sum of digit of all numbers except 240 is a prime number, whereas sum of digits of the number 240 is a non-prime. Hence, it is different from all others.

28. (*c*) All others are perfect square of natural number.

29. (*d*) All others are divisible by 12.

30. (*e*) All others are divisible by 7.

31. (*e*) Only 75 is divisible by 15.

32. (*d*) Except '64', none of the numbers is a square or a cube.

33. (*c*) Except '87', all are prime numbers 87 is divisible by 3.

34. (*d*) In all other options, digit at the second place is the difference from first and third digits.

35. (*a*) All others are divisible by 13.

36. (*b*) Except '841', all are even numbers.

37. (*d*) In all other options, sum of the digits is 20.

38. (*d*) 3216 ⇒ 3 + 2 + 6 – 1 = 10;

2338 ⇒ 2 + 3 + 8 – 3 = 10;

3205 ⇒ 3 + 2 + 5 – 0 = 10;

2015 ⇒ 2 + 0 + 5 – 1 = 6

Therefore, 2015 is different from the other three.

39. (*d*) In all other options, digit in the middle is the sum of the other two digits.

40. (*d*) All others are complete squares.

41. (*b*) In all others first and last two digits are same.

42. (*d*) Except '64, 73' all are having difference of 11.

43. (*a*) In all others, 2nd number is 2 more than the first.

44. (*a*) In all others, 2nd number = 1st number + 6

45. (*b*) In all other, 2nd number = $\frac{\text{1st number}}{3}$

46. (*d*) 8 + 3 = 11 1 + 3 = 4

7 + 3 = 10 3 + 3 = 6 ≠ 5

47. (*b*) In all other numbers the sum of the digits is 17.

48. (*b*) All other pairs consists of prime number only.

49. (*c*) In all other pairs, the difference between the two numbers is a multiple of 9.

50. (*c*) 5-2 = 3, 19-16 = 3, 27-23 = 4, 31-23 = 3

51. (*b*) In all others, 2nd number = (2 × 1st number) + 2

52. (*a*) Second number is the next prime number to the first number.

53. (*c*) Second number is the reverse of the first number.

54. (*d*) Each digit of second number is the square of the respective digit of the first number.

55. (*d*) Second number is the difference of the square of the digits of the first number.

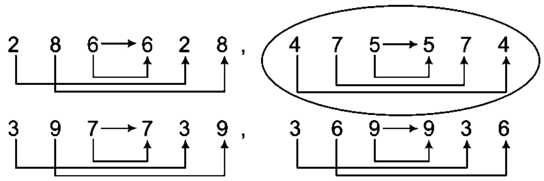
56. (*c*) $5 \xrightarrow{+16} 21, \quad 29 \xrightarrow{+16} 45$

$71 \xrightarrow{+16} 87, \quad 48 \xrightarrow{\boxed{+20}} 68$

So, '48 – 68' is different from other three.

57. (*b*) Except '9, 64', all numbers are consecutive squares.

58. (*c*)



So, except option (c) all have the same rule or pattern for swapping.

Hence, '475, 574' is different from other three.

59. (*a*) In all the given numbers, the middle digit is twice in second group.

60. (*c*) Only option (c) has difference of 7, rest have difference of 8 between first and second number.

61. (*a*) Except 8-15, in all the options, both of the numbers are the squares of consecutive natural numbers.

62. (*c*) $9 - 2 = 7 \rightarrow 7^2 = 49$

$13 - 2 = 11 \rightarrow 11^2 = 121$

$10 - 2 = 8 \rightarrow 8^2 = 64 \neq 61$

$7 - 2 = 5 \rightarrow 5^2 = 25$

63. (*c*) Except option (c) in all the other options, all numbers are divisible by a particular number as option (a) by 7, option (b) by 8 and option (d) by 7.

64. (*d*) 14 + 3 = 17 → 17 + 6 = 23, 19 + 3 = 22 → 22 + 6 = 28

17 + 3 = 20 → 20 + 6 = 26, 21 + 2 = 23 → 23 + 7 = 30

65. (*b*) In all the options except (b), second and third numbers are the square and cube of first number respectively.

66. (*a*) Except (a) in all the other options, numbers are even numbers but in option (a) all numbers are prime numbers.

67. (*d*) In the other options except (d), second number is obtained by the addition of 1 in first number and third number is obtained by the addition of 10 in second number.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-9) In each of the following questions, three out of the four alternatives contains letters/numbers of the alphabet placed in a particular form. Find the one that does not belong to the group.

1. (a) JMP (b) RUX (c) UYB (d) EHK

2. (a) C9F (b) H20L (c) N31Q (d) E29Y

3. (a) GK (b) MQ (c) PU (d) SW

4. (a) CEH (b) KMP (c) XZC (d) NPT

5. (a) DW (b) LO (c) JR (d) HS

6. (a) PUS (b) HLJ (c) UYW (d) BFD

7. (a) MLI (b) FEB (c) UTQ (d) SRN

8. (a) A8C (b) D22G (c) H42M (d) F34J

9. (a) ZS12 (b) PM4 (c) RJ16 (d) FD2

Directions (Q. Nos. 10-20) In each of the following questions/three and five/four are alike in a certain way and so form a group. Which is the one that does not belong to the group?

10. (a) Cotton (b) Nylon (c) Silk (d) Linen (e) Fibre **[LIC (AAO) 2012]**

11. (a) 144 (b) 169 (c) 256 (d) 288

12. (a) Camel (b) Horse (c) Bullock (d) Cat

13. (a) Wood (b) Stone (c) Tree (d) Engine

14. (a) Cumin (b) Groundnut (c) Clove (d) Peppier

15. (a) 52 (b) 96 (c) 24 d) 36

16. (a) Leaf (b) Stem (c) Branches (d) Garden (e) Root **[LIC (ADO) 2011]**

17. (a) Pencil (b) Toy (c) Pen (d) Scale

18. (a) Radium (b) Thorium (c) Sodium (d) Uranium (e) Non of these **[CBI (PO) 2011]**

19. (a) Stationery (b) Pencil (c) Pen (d) Marker

20. (a) 125 (b) 216 (c) 729 (d) 525

Directions (Q. Nos. 21-28) In the following questions, numbers/words are given in three out of the four alternatives having same relationship. You have to choose the one which does not belong to the group?

21. (a) 3 : 8 (b) 6 : 35 (c) 7 : 50 (d) 1 : 0

22. (a) 1 : 2 (b) 3 : 28 (c) 4 : 65 (d) 2 : 7

23. (a) 22 : 42 (b) 4 : 6 (c) 11 : 20 (d) 5 : 14

24. (a) 21 : 24 (b) 28 : 32 (c) 14 : 16 (d) 54 : 62

25. (a) 6 : 23 (b) 3 : 11 (c) 1 : 3 (d) 5 : 18

26. (a) Profit : Loss (b) Wise : Foolish (c) Virtue : Vice (d) Seduce : Attract

27. (a) Twigs : Nest (b) Wood : Furniture (c) Pitchers : Pottery (d) Gold : Ornaments

28. (a) 6 : 26 (b) 11 : 46 (c) 9 : 40 (d) 16 : 66

Directions (Q. Nos. 29-70) In each of the following questions, five/four words/number are given, out of which four/three are same in one way or the other and the fifth/forth one is different from these four/three. Select the odd one.

29. (a) Sun (b) Moon (c) Venus (d) Mars

30. (a) Microphone (b) Microscope (c) Spectacles (d) Telescope

31. (a) Artery (b) Ventricle (c) Pharynx (d) Aorta

32. (a) Diamond (b) Ruby (c) Emerald (d) Turquoise

33. (a) Crimson (b) Scarlet (c) Vemilion (d) Cardinal

34. (a) Swim (b) Run (c) Anticipate (d) Acrobat

35. (a) Shorthand (b) Morse (c) Semaphore (d) Record

36. (a) Green (b) Violet (c) Brown (d) Yellow

37. (a) ZVRN (b) UQMJ (c) SOKG (d) TPLH
[UP B. Ed. 2011]

38. (a) RNMP (b) JFEH (c) RPOQ (d) HDCF
[UP B. Ed. 2010]

39. (a) Sand (b) Cement (c) Building (d) Wood
(e) Bricks
[Canara Bank (PO) 2009]

40. (a) Black (b) Yellow (c) Red (d) Green
(e) Violet
[IOB (PO) 2009]

41. (a) Nephew (b) Cousin (c) Mother (d) Brother
(e) Sister
[NABARD 2009]

42. (a) Coriander (b) Onion (c) Beetroot (d) Ginger

43. (a) Cup (b) Jug (c) Tumbler (d) Plate
(e) Pitcher
[Andhra Bank (PO) 2009]

44. (a) River (b) Earth (c) Aeroplane (d) Breeze
[SSC (Multitasking) 2013]

45. (a) 12 (b) 28 (c) 52 (d) 68
(e) 96
[Andhra Bank (PO) 2009]

46. (a) 217 (b) 143 (c) 241 (d) 157
(e) 181
[Andhra Bank (PO) 2009]

47. (a) Plastic (b) Nylon (c) Polythene (d) Terylene
(e) Silk
[PNB 2009]

48. (a) Guitar (b) Violin (c) Flute (d) Veena

49. (a) RU (b) BE (c) FI (d) AD
(e) IM
[BOI (PO) 2009]

50. (a) TEETH (b) SLEEP (c) SHEEP (d) GREED
[SSC (CPO) 2013]

51. (a) LOJ (b) FID (c) RUP (d) ILN
(e) CFA
[Canara Bank (PO) 2010]

52. (a) Long (b) Tall (c) High (d) Short
(e) Dim
[Canara Bank (PO) 2010]

53. (a) 78 (b) 48
(c) 72 (d) 54

54. (a) Sweet (b) Cake (c) Pastry (d) Bread
(e) Biscuit
[RBI (PO) 2009]

55. (a) 39 (b) 83 (c) 78 (d) 52
(e) 45
[OBC (PO) 2008]

56. (a) 31 (b) 39 (c) 47 (d) 41
(e) 43
[SBI (PO) 2008]

57. (a) 25 (b) 64 (c) 189 (d) 225
(e) 121

58. (a) 169 (b) 225 (c) 289 (d) 441
(e) 255
[SBI (PO) 2008]

59. (a) 27 (b) 64 (c) 125 (d) 384

60. (a) 84 (b) 120 (c) 72 (d) 108
(e) 98
[BOI (PO) 2008]

61. (a) 143 (b) 257 (c) 195 (d) 15
(e) 63
[SBI (PO) 2008]

62. (a) 26 (b) 34 (c) 72 (d) 46
(e) 38
[Vijaya Bank (PO) 2008]

63. (a) Cuckoo (b) Crow (c) Bat (d) Parrot
(e) Sparrow
[Vijaya Bank (PO) 2008]

64. (a) Fruit (b) Flower (c) Leaf (d) Tree

65. (a) Garo (b) Khaasi (c) Kangra (d) Jaintia
[SSC (CPO) 2012]

66. (a) Radish (b) Carrot (c) Garlic (d) Gourd
(e) Ginger
[OBC (PO) 2008]

67. (a) 39 (b) 69 (c) 57 (d) 129
(e) 117
[OBC (Clerk) 2008]

68. (a) Tree (b) Plant (c) Shrub (d) Farm

69. (a) Sharpener (b) Calculator (c) Eraser (d) Pencil
(e) Stapler
[Corporation Bank (PO) 2008]

70. (a) 17 (b) 19 (c) 23 (d) 27
(e) 29
[Corporation Bank (PO) 2008]

Directions (Q. Nos. 71-80) Find out the odd one from the given options which is different from others.

71. (a) Flurry : Blizzard (b) Moisten : Drench
(c) Prick : Stab (d) Scrub : Polish

72. (a) Thyroxine (b) Adrenaline
(c) Iodine (d) Insulin **[SSC (10+2) 2013]**

73. (a) Scurvy (b) Rickets
(c) Night-blindness (d) Influenza
[SSC (CGL) 2013]

74. (a) Dim : Bright (b) Wrong : Right
(c) Shallow : Deep (d) Genuine : Real

75. (a) Book : Page (b) Table : Drawer
(c) Loom : Cloth (d) Car : Wheel

76. (a) Stale : Fresh (b) Truth : Lie
(c) Slow : Sluggish (d) Teach : Learn
(e) Kind : Cruel
[Bank (PO) 2013]

77. (a) Apple : Jam (b) Lemon : Citrus
(c) Orange : Squash (d) Tomato : Pury

78. (a) Cow : Fodder (b) Crow : Carrion
(c) Poultry : Farm (d) Vulture : Prey

79. (a) Chandragupta : Mauryan (b) Babar : Mughal
(c) Kanishka : Kushan (d) Mahavira : Jainism

80. (a) Cockroach : Anternae (b) Lizard : Flagella
(c) Hydra :Tentacles (d) Plasmodium : Cilia

81. (a) HJM (b) OQT (c) BDG (d) VXZ

82. (a) GMS (b) EKQ (c) JOU (d) LRX

83. (a) ROQP (b) KHJI (c) VSUT (d) JHIG

84. (a) KQ14 (b) AY13 (c) MR11 (d) GW15
[MAT 2014]

85. (a) Intestines (b) Eyes (c) Hands (d) Ears **[NMAT 2005]**

86. (a) Shovel : Mud
(b) Screwdriver : Screw
(c) Hammer : Nail
(d) Pen : Pencil **[Hotel Mgmt 2004]**

87. (a) BCGK (b) MNRV (c) RSVZ (d) EFJN **[MAT 2010]**

88. (a) DFIMR (b) CEHLQ (c) GILPU (d) HJMPT **[SNAP 2012]**

89. (a) 1 (b) 9 (c) 48 (d) 16 **[Hotel Mgmt 2012]**

90. (a) 12-28 (b) 14-82 (c) 23-64 (d) 36-72 **[SNAP 2011]**

91. (a) DIRAMLOG (b) ERENIGEN
(c) UIHCSSBI (d) AFOLDFID **[SNAP 2013]**

Directions (Q. Nos. 92-94) Rearrange the jumbled alphabets in the following four options and find the odd word among them. **[MAT 2014]**

92. (a) RARCTO (b) NIATCRU (c) BACGEBA (d) ILBJARN

93. (a) LPAEP (b) AYAPAP (c) AVGAU (d) SRAHDI

94. (a) LIWLOP (b) RSTESMTA
(c) TSROFE (d) UTQLI

Response & Interpretations (Master Exercise)

1. (*c*) In all other groups of words, there is a gap of two letters as in the alphabet between first and second, second and third letters.

2. (*d*) In all other groups of words, numeric component in between the first and second letters is the sum of positions of first and last letters in the alphabet.

3. (*c*) In all other pair of letters, there is a gap of three letters as in the alphabet between the two letters.

4. (*d*) In all other groups, there is a gap of one letter between first and second letters and gap of two letters between second and third letters.

5. (*c*) In all other pair of letters, first and second letters are equidistant from the beginning and end in alphabetical series.

6. (*a*) In all other groups, there is a gap of one letter between first and third letters as in the alphabetical order.

7. (*d*) In all other groups, there is a gap of two letters as in the alphabet between second and third letters.

8. (*d*) In all other groups, number between first and second letters is twice the sum of positions of first and last letters in the alphabet.

9. (*c*) In all other groups, last number is double the number of letters between the first and second letter.

10. (*b*) Only 'Nylon' is synthetic in nature.

11. (*d*) Except '288' all other numbers are squares of natural numbers.

12. (*d*) Except 'cat' all other animals are used for carriage of goods.

13. (*d*) 'Engine' is made by man, rest all are natural.

14. (*b*) All the rest are spices while 'Groundnut' is a dry fruit.

15. (*a*) All the numbers except '52' are divisible by 12.

16. (*d*) Except 'Garden' all the others are the parts of a tree.

17. (*b*) All the rest are the items of stationary.

18. (*c*) Except 'Sodium' all other are radioactive.

19. (*a*) All other are 'Stationery' items.

20. (*d*) All other except '525' are cubes of some numbers.

21. (*c*) In other numbers, second number is one less than the square of first number. $(3)^2 - 1 = 8$, $(6)^2 - 1 = 35$ … and so on.

22. (*d*) Second number is one more than the cube of the first number.

23. (*d*) First number is one more than the half of the second number.

24. (*d*) The ratio among the numbers is 7 : 8.

25. (*d*) Second number is one less than four times the first number.

26. (*d*) The words in all other pairs are antonyms of each other.

27. (*c*) In all other pairs, first is the material used to make the second.

28. (*c*) In all others, second number is two more than four times the first number.

29. (*b*) All the terms except 'Moon' are related to the 'solar system'.

30. (*a*) All the terms except 'Microphone' are related to 'vision'.

31. (*c*) Except 'Pharynx' all other terms are related to heart.

32. (*a*) Except 'Diamond' all other precious stones contain some colour in them.

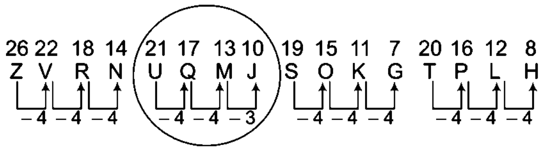
33. (*d*) Except 'Cardinal' all the terms are related to colours.

34. (*c*) Except 'anticipate' all the terms are related to body movements or exercise.

35. (*d*) Except 'Record' all the terms are related to secret system of sending messages.

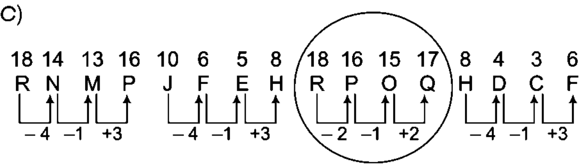
36. (*c*) Except 'Brown' all the colours are present in the rainbow.

37. (*b*)



Clearly, UQMJ is different from other three.

38. (*c*)



Clearly, 'RPOQ' follows a different pattern from others.

39. (*c*) All the others are materials used in a building.

40. (*a*) Except 'Black', all others are primary colours.

41. (*b*) Except in 'cousin', the sex can be determined.

42. (*a*) Except (a), all others are modified stem.

43. (*d*) Except 'Plate', all the others are used to contain liquid.

44. (*a*) Except 'Breeze' all other things can be seen. Breeze can be felt.

45. (*e*) Except '96', all the others are obtained by multiplying 4 with a prime number.

46. (*b*) Except '143', all others are of the form $12n + 1$ but 143 is of the form $12n - 1$, where n is a natural number.

47. (*e*) Except 'Silk', all the others are artificial.

48. (*c*) Except 'Flute', all others are string instruments.

49. (*e*) Except 'IM', in all the others, there is a gap of two letters.

50. (*a*) In SLEEP, SHEEP and GREED, place of 'EE' is second from the right end while in TEETH, EE is second from the left end.

51. (*d*) In all others, 1st letter + 3 = 2nd letter

And, 1st letter – 2 = 3rd letter

52. (*e*) All others are adjectives denoting size.

53. (*a*) Except '78', if you subtract 1, all the others give a prime number.

54. (*a*) Except 'Sweet', all the others are baked items.

55. (*b*) 83 is the only number which is prime, while others are composite numbers.

56. (*b*) Except '39', all the others are prime numbers, while 39 is a composite number

As, $39 \rightarrow 13 \times 3$

57. (*c*) Except '189', all the others are square numbers.

$25 \rightarrow 5^2$, $64 \rightarrow 8^2$, $225 \rightarrow 15^2$ and $121 \rightarrow 11^2$.

58. (*e*) Except '255', all the others are perfect squares of natural numbers.

59. (*d*) Except '384', all the others are perfect cubes of natural numbers.

60. (*e*) Except '98',all the others are multiples of 6.

$84 \rightarrow 6 \times 14$, $120 \rightarrow 6 \times 20$, $72 \rightarrow 6 \times 12$, $108 \rightarrow 6 \times 18$

61. (*b*) $143 \rightarrow 12^2 - 1$, $257 \rightarrow 16^2 + 1$, $195 \rightarrow 14^2 - 1$,

$15 \rightarrow 4^2 - 1$, $63 \rightarrow 8^2 - 1$

Hence, '257' is odd one.

62. (*c*) Except '72', all the others give a prime number, when divided by 2.

63. (*c*) Except 'Bat', all the others are birds but bat is a mammal.

64. (*d*) Except 'Tree', all the others are its parts.

65. (*c*) 'Kangra' is the name of a valley and others are mountain ranges of North-East

66. (*d*) Except 'Gourd', all the others grow beneath the ground.

67. (*e*) Except '117', all the others give a prime number when divided by 3.

68. (*d*) Except 'Farm', all the others are form of plants.

69. (*b*) Except 'Calculator', all the others are stationary items that work mechanically, while calculator works electronically.

70. (*d*) Except '27', all the others are prime numbers.

71. (a) Except option (a), second word shows the higher intensity of first.

72. (*c*) Except (c), all are produced by various glands inside the human body.

73. (*d*) Except 'Influenza' all other disease are caused by lack of any vitamins.

74. (*d*) In all other pairs, the two words are antonyms to each other.

75. (*c*) In all others, second is the part of first.

76. (*c*) In all pairs except (c), both the words are antonyms of each other.

77. (*b*) In all pairs except (b), second is made by first.

78. (*c*) In all pairs except (c), second is the food for first.

79. (*d*) In all pairs except (d), first is the founder of second.

80. (*b*) In all others except (b), second is the organ used by first for its movement.

81. (*d*) In all other groups, there is a gap of two letters between second and third letters as in the alphabet.

82. (*c*) In all other groups, first and third letters are equidistant from the middle letter as in the alphabet.

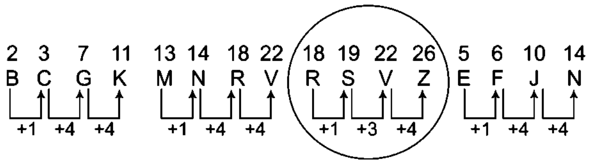
83. (*e*) In all other groups, third and fourth letters are consecutive letters of the alphabet.

84. (*c*) In all other groups, number at the end is half of the positions of sum of first and second letters in the alphabet. Except option (c), all are following a certain rule

85. (*a*) Because 'Intestines' are inside the body.

86. (*d*) In all pairs except (d), first is a tool which works on second.

87. (*c*)



Therefore, 'RSVZ ' is different from other three.

88. (*d*) Except 'HJMPT', all three are same and having difference in increasing order.

89. (*c*) Only '48' is not square of any number.

90. (*d*) Only in option (d) second number is twice of first number.

91. (*b*) According to the given information,

(a) DIRAMLOG - MARIGOLD (b) ERENIGEN - ERENIGEN

(c) UIHCSSBI - HIBISCUS (d) AFOLDFID - DAFFODIL

All except 'ERENIGEN' are related to the 'flowers'.

92. (*b*) According to the given information,

(a) RARCTO - CARROT (b) NIATCRU - CURTAIN

(c) BACGEBA - CABBAGE (d) ILBJARN - BRINJAL

Except 'Curtain' all others are vegetables.

93. (*d*) According to the given information,

(a) LPAEP - APPLE (b) AYAPAP - PAPAYA

(c) AVGAU - GUAVA (d) SRAHDI - RADISH

Except 'RADISH' all others are fruits while Radish is vegetable.

94. (*c*) According to the given information,

(a) LIWLOP - PILLOW (b) RSTESMTA - MATTRESS

(c) TSROFE - FOREST (d) UTQLI - QUILT

So, 'Forest' is different from others.

3

Logical Alphabet and *Number Sequence Test*

Logical Alphabet and Number Sequence Test are based on arrangement of English letters/numbers in a certain defined pattern. These tests are also based on formation of new numbers/words and finding letter pairs and numbers between two specific letter and numbers.

Different types of questions covered in this chapter are as follows

- Alphabet Test
- Letters Pair Problem
- Word Formation and Letter Rearrangement
- Rule Detection
- Finding Digits After Rearrangement
- Letter and Number Sequence Test

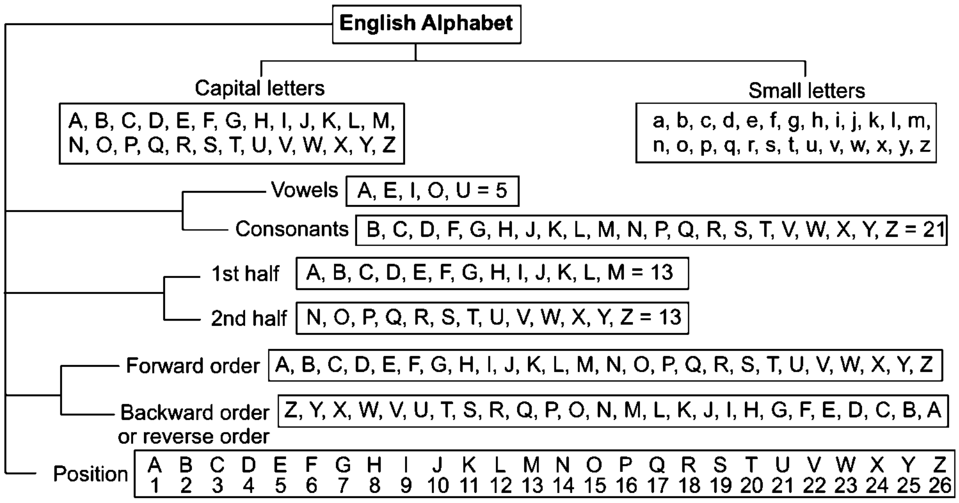
In this chapter, we deal with the questions in which a letter, a group or series of letters is given. This groups can be a meaningful or unscrambled group of words. Based on that group, a candidate is asked to find a letter pair between the words or form a meaningful word with different letters or find letter or number to the left or right of a particular letter.

Before moving to the type of questions, first we should learn the letter position of English alphabet and various other facts related to it.

There are 26 letters in English alphabet

A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z.

The following diagram will give a better idea about English alphabet


English Alphabet
Capital letters
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z
Small letters
a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z
Vowels
A, E, I, O, U = 5
Consonants
B, C, D, F, G, H, J, K, L, M, N, P, Q, R, S, T, V, W, X, Y, Z = 21
1st half
A, B, C, D, E, F, G, H, I, J, K, L, M = 13
2nd half
N, O, P, Q, R, S, T, U, V, W, X, Y, Z = 13
Forward order
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z
Backward order or reverse order
Z, Y, X, W, V, U, T, S, R, Q, P, O, N, M, L, K, J, I, H, G, F, E, D, C, B, A
Position
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

Positions

In English alphabet, each letter has its corresponding position. *Such positions of letters are of two types*

1. **Forward Order Letter Position** In such order, positions are counted from left to right. In other words, one starts counting from A and goes towards Z. *Let us see*

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Left to Right →

2. **Backward or Reverse Order Letter Position** In backward order position, counting is started from Z and is ended at A. In another words, counting is done from right to left. *Let us see*

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

← Right to Left

K Memory *Add-ons*

The place of English letters can be remembered by using the following two techniques

1.

	E	J	O	T	Y
Position in English alphabet =	5	10	15	20	25

2.

	C	F	I	L	O	R	U	X
Position in English alphabet =	3	6	9	12	15	18	21	24

Note One can memorize the positions of letters shown here as table of 5 and 3 is associated.

After the positional values of English letters are known, we should learn about the position of *Opposite* letters and *Left and Right* of a letter.

Opposite Letters

A letter is said to opposite of other when sum of their positional values is equal to 27.

e.g., Positional value of B = 2 Positional value of Y = 25 Required sum = 2 + 25 = 27

Hence, they are opposite letter pair.

If we have to find the opposite letter of any letter, then corresponding position of that letter is subtracted from 27. *Let us see*

Opposite letter of A = 27 – Position of A = 27 – 1 = 26 th letter = Z

Opposite letter of B = 27 – Position of B = 27 – 2 = 25 th letter = Y and so on.

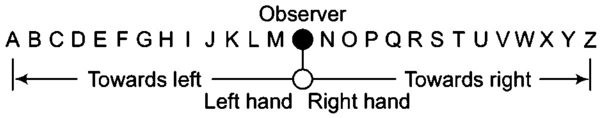
Trick to Remember Opposite Letters

AZ	Remember (ZA) of 'go' in Hindi
BY	Remember the word 'by'
CX	Remember CIX (like 'Six')
DW	Remember DW of the word DEW.
EV	Remember EV (Evening)
FU	Remember FU of 'Full'
GT	Remember GT Road (Built by Shershah)

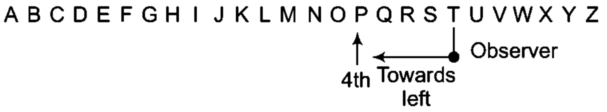
HS	Higher Secondary
IR	Indian Railway
JQ	Jack and Queen (in the game of cards)
KP	Kevin Peterson (England cricket player)
LO	Remember LO of the word LOVE
MN	Remember MN of the word MAN

Left and Right of a Letter

Letters do not have their own left and right. We decide left and right of letters on the basis of ours left and right. In other words, the left of letters is towards our left and the right of letters is towards our right. *Let us see*

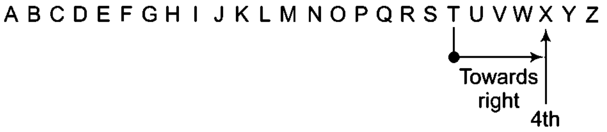

Observer
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Towards left
Towards right
Left hand
Right hand

If you have to find out 4th letter to the left of T, then stand in front of T like below.


A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Observer
4th
Towards left

Clearly, 4th letter to the left of T is P.

And, if you have to find out 4th letter to the right of T, then stand in front of T and find required letter as below.


A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Towards right
4th

Some terms related to 'Left' and 'Right' are as follows

(i) **Just Left** It means just before. *e.g.,* G is the letter just left of H.

(ii) **Just Right** It means just after. *e.g.,* Q is the letter just right of P.

(iii) **From our Left** It means 'from our left to right' or we can say it as 'from letter A to Z'. *i.e.,*

$$A \rightarrow B \rightarrow C \rightarrow \ldots\ldots \rightarrow Y \rightarrow Z$$

(iv) **From our Right** It means 'from our right to left' or we can say it as 'from letter Z to A'. *i.e.,*

$$A \leftarrow B \leftarrow C \leftarrow \ldots\ldots \leftarrow Y \leftarrow Z$$

(v) **To the Left** It means 'from Z to A'. *i.e.,*

$$A \leftarrow B \leftarrow C \leftarrow \ldots\ldots \leftarrow Y \leftarrow Z$$

(vi) **To the Right** It means 'from A to Z'. *i.e.,*

$$A \rightarrow B \rightarrow C \rightarrow \ldots\ldots \rightarrow Y \rightarrow Z$$

Various types of problems are asked from this chapter, are as follow

Type 1 Alphabet Test

In this type, the questions asked are based on finding the place of an English letter to the left or right of another English letter in the alphabetical order. Sometimes the questions are based on finding the number of English letter(s) between two different English letters.

This type of questions vary on the arrangement of alphabetical order. It can be backward, first half backward, second half backward, multiple letter segments in changed order etc. Some of the questions asked are based on finding the middle letter of two specified letters and in some questions it is asked that which letters do not change their places after alphabetical arrangement.

So, the detailed explanation with examples are as follows

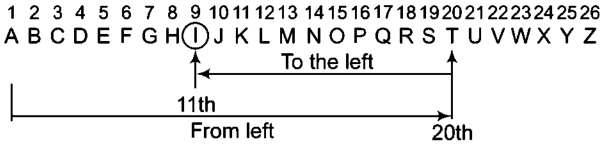
A. Place of a Letter in Forward Order

In this type of questions the exact letter has to be found out with the help of direction and place given in the question. The example discussed as below will give you a better idea about this type of questions.

***Ex* 1** Find the 11th letter to the left of 20th letter from left in the English alphabet.

(a) D (b) J (c) K (d) I

Sol. (*d*) Let us see


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
To the left
11th
From left
20th

Hence, 11th letter to the left of 20 th letter from left is I.

Alternate Method

In English alphabet 11th letter to the left of 20th letter of your left = (20 − 11) th letter from left = 9 th letter from left = I

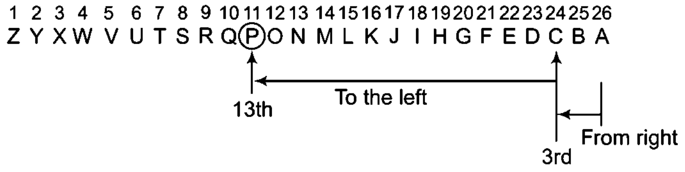
B. Place of Letter in Completely Backward Order

In such questions the order of letters is completely reversed or they are counted from Z to A and then the place of letter is asked with the help of direction.

Ex **2** If English alphabet is written in backward order, then what will be the 13th letter to the left of the 3rd letter from right?

(a) P (b) N (c) R (d) Q

Sol. (*a*) Backward order is written as


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
Z Y X W V U T S R Q P O N M L K J I H G F E D C B A
To the left
13th
From right
3rd

Now, the 13th letter to the left of the 3rd letter from right is P.

Alternate Method

In backward order of alphabet, 13th letter to the left of 3rd letter of your right = (3 + 13) th letter from right = 16 th letter from right = P

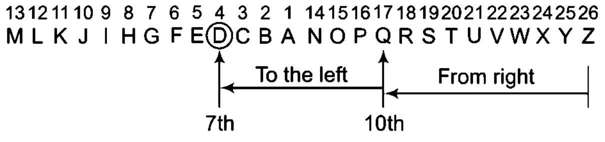
C. Place of a Letter When First Half is in Backward Order

In such type of questions, only the 1st half of the order of alphabetical series is reversed and remaining are left unaltered *i.e.,* order of A to M is reversed and then questions related to position of letters are asked.

Ex **3** If 1st half of the English alphabet is written in backward order, then what will be the 7th letter to the left of the 10th letter from your right?

(a) C (b) E (c) D (d) J

Sol. (*c*) Let us see


13 12 11 10 9 8 7 6 5 4 3 2 1 14 15 16 17 18 19 20 21 22 23 24 25 26
M L K J I H G F E D C B A N O P Q R S T U V W X Y Z
To the left
From right
7th
10th

∴ The 7th letter to the left of 10th letter from our right is D.

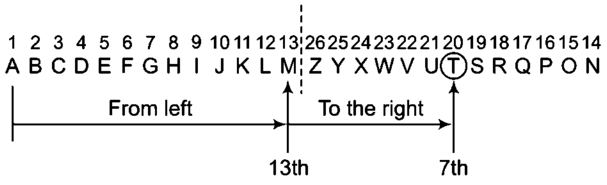
D. Place of a Letter When Second Half is in Backward Order

In such type of questions the 2nd half is reversed *i.e.,* from N to Z and remaining are kept as it is and then questions related to place of English alphabet are asked.

Ex **4** If 2nd half of the English alphabet is written in backward order, then what will be the 7th letter to the right of 13th letter from your left?

(a) T (b) U (c) V (d) S

Sol. (*a*) Let us see


1 2 3 4 5 6 7 8 9 10 11 12 13 26 25 24 23 22 21 20 19 18 17 16 15 14
A B C D E F G H I J K L M Z Y X W V U T S R Q P O N
From left
To the right
13th
7th

∴ The 7th letter to the right of 13 th letter from our left is T.

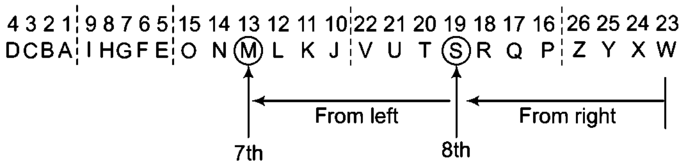
E. Multiple Letter Segment in Backward Order

In such type of questions, no specified order of change is followed in alphabetical order. They are changed according to the condition given in particular question.

Ex **5** If first four letters of the English alphabet are written in reverse order; again next 5 letters are written in reverse order ; again next 6 letters are written in reverse order; again next 7 letters are written in reverse order and finally, the remaining letters are also written in reverse order, then what will be the 7th letter to the left of the 8th letter from right?

(a) M (b) N (c) O (d) L

Sol. (*a*) Let us see the arrangement

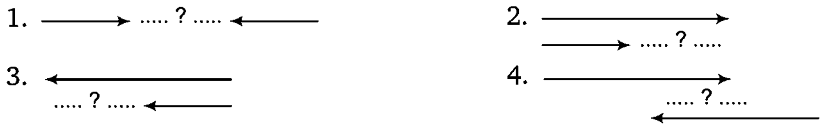

4 3 2 1 9 8 7 6 5 15 14 13 12 11 10 22 21 20 19 18 17 16 26 25 24 23
D C B A I H G F E O N M L K J V U T S R Q P Z Y X W
From left
From right
7th
8th

∴ The 7th letter to the left of the 8th letter from right is M.

F. Number of Letters in the Middle of Two Letters

In this particular type, questions asked to calculate the total number of English letters between any two specified letter as directed in the question.

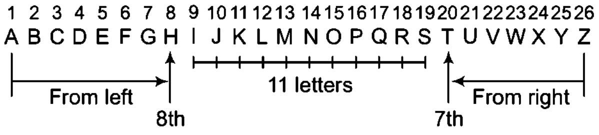
Four situations can be created under these type of problems



Ex **6** How many letters are there between 8th letter from left and 7th letter from right in the English alphabet?

(a) 7 (b) 11 (c) 8 (d) 9

Sol. (*b*) Let us see


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
From left
8th
11 letters
7th
From right

∴ There are 11 letters between 8th letter from left and 7th letter from right.

Alternate Method

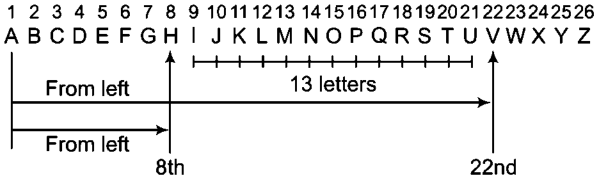
Total number of letters in the English alphabet = 26

∴ Required number of letters = 26 – (8 + 7) = 26 – 15 = 11

Ex **7** How many number of letters are there between 22nd letter from left and 8th letter from left in the English alphabet?

(a) 12 (b) 15 (c) 11 (d) 13

Sol. (*d*) Let us see there are 13 such letters


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
From left
13 letters
From left
8th
22nd

Alternate Method

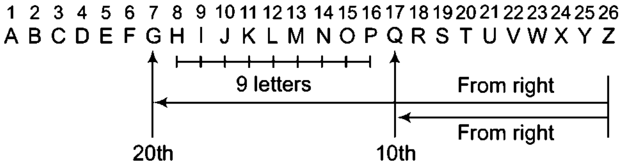
22nd letter from left = (27 – 22) = 5th letter from right. Clearly, we have to find the number of letters between 8th letter from left and 5th letter from right.

∴ Required number of letters = 26 – (8 + 5) = 26 – 13 = 13

Ex **8** Find the number of letters between 20th letter from right and 10th letter from right in the English alphabet.

(a) 9 (b) 12 (c) 7 (d) 11

Sol. (*a*) Let us see


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
9 letters
From right
From right
20th
10th

∴ There are 9 such letters.

Alternate Method

20th letter from right = (27 – 7) = 20th letter from left

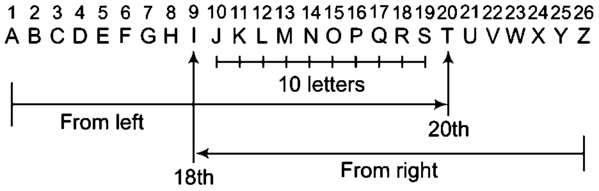
Clearly, we have to find the number of letters between 7th letter from left and 10th letter from right.

∴ Required number of letters = 26 – (7 + 10) = 26 – 17 = 9

Ex **9** How many letters are there between 20th letter from left and 18th letter from right in the English alphabet?

(a) 15 (b) 6 (c) 10 (d) 12

Sol. (*c*) Let us see


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
10 letters
From left
20th
18th
From right

∴ There are 10 such letters.

Alternate Method

18th letter from right = (27 – 18) = 9th letter from left. And 20th letter from left = (27 – 20) = 7th letter from right.

Clearly, we have to find the number of letters between 9th letter from left and 7th letter from right.

∴ Required number of letters = 26 – (9 + 7) = 26 – 16 = 10

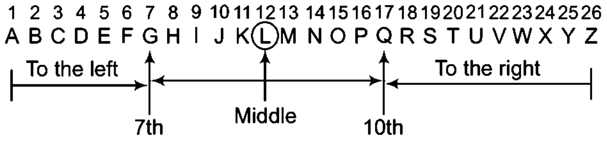
G. Middle Letter between Two Letters

In these types of questions, it is asked to find the middle letter between the two specified letters of English alphabet.

***Ex* 10** Which letter is in the middle of 7th letter from left and 10th letter from right in the English alphabet?

(a) L (b) P (c) M (d) Q

Sol. (*a*) Let us see



∴ Letter between G and Q is L.

Alternate Method

10th letter from right = 27 – 10 = 17th letter from left.

∴ Required middle letter $= \frac{7+17}{2} = \frac{24}{2} = 12$th letter from left = L

H. Same Position of Alphabet after Arranging Alphabetically

In this type of questions, a word is given and then asked how many letters remain same in their position, if they are arranged in alphabetical order.

***Ex* 11** How many such letters are there in the word 'CADMP' which remain same in their position, if they are arranged in an alphabetical order?

(a) One (b) Two (c) Three (d) Four

Sol. (*c*) Original word C A $\boxed{\text{D}}$ $\boxed{\text{M}}$ $\boxed{\text{P}}$

Rearrangement A C $\boxed{\text{D}}$ $\boxed{\text{M}}$ $\boxed{\text{P}}$

So, such type of letters are D, M and P.

***Ex* 12** If the vowels of the word 'ROUTINE' are 1st arranged in alphabetical order, followed by the consonants in the alphabetical order, which of the following will be 4th from the right end after the rearrangement?

(a) N (b) U (c) T (d) O

Sol. (*b*) Original word, R O U T I N E

Rearrangement, E I O U N R T

↓ ↓ ↓ ↓

4 3 2 1

← From right

Hence, U is the correct answer.

Practice Corner **3.1**

Build your Confidence...

1. In the English alphabet, find the position of S from right.
(a) 8 (b) 5 (c) 4 (d) 9

2. In the English alphabet, find the position of L from left.
(a) 12 (b) 16 (c) 11 (d) 15

3. Which letter is 7th from right in the English alphabet?
(a) P (b) C (c) T (d) V

4. Find the letter which is 16th from right in the English alphabet.
(a) K (b) L
(c) J (d) F

5. In the English alphabet, which letter is 10th from right? **[UP B.Ed. 2011]**
(a) P (b) Q
(c) R (d) S

6. If the English alphabet is written in backward order, then which letter will be 5th to the left of letter M? **[MAT 2011]**
(a) G (b) H (c) S (d) R

7. Find the letter that comes 5th to the left of R in the English alphabet. **[SSC (CGL) 2009]**
(a) M (b) N (c) V (d) T

8. If English alphabet is written in the backward order, then which letter is 7th to the right of K? **[UP B.Ed. 2011]**
(a) A (b) B (c) C (d) D

9. Which letter is 8th to the right of 7th letter from the left in the English alphabet?
(a) Q (b) O (c) R (d) S

10. Which of the following letters is 14th to the right of 6th letter from the left in the English alphabet?
(a) R (b) P (c) W (d) T

11. Find the middle letter between K and V in the English alphabet.
(a) N (b) O
(c) Q (d) No letter possible

12. Which letter is between midway of 8th letter from left and 7th letter from right in the English alphabet?
(a) N (b) M (c) P (d) O

13. Which letter is 10th to the left of 18th letter from left in the English alphabet? **[UP B.Ed. 2010]**
(a) L (b) J (c) H (d) I

14. If the letters of English alphabet are written in reverse order, then find the 10th letter to the left of 10th letter from right? **[UCO Bank (PO) 2010]**
(a) S (b) V (c) T (d) G
(e) W

15. If the English alphabet is written in reverse order, then which letter is 7th to the left of 11th letter from right? **[SSC (10+2) 2008]**
(a) W (b) H (c) R (d) D

16. If English alphabet is written in backward order, then find the 7th letter to the left of 11th letter from left.
(a) W (b) H (c) I (d) D

17. If 1st half of the English alphabet is written in reverse order, then find the 15th letter from right. **[Canara Bank (Clerk) 2008]**
(a) A (b) B (c) C (d) D
(e) E

18. If the 2nd half of the English alphabet is written in the reverse order, then find the 15th letter from right. **[LIC (ADO) 2009]**
(a) M (b) L (c) K (d) J
(e) O

19. If the 1st half of the English alphabet is written in the backward order, then find the 15th letter to the left of 20th letter from left. **[Syndicate Bank (Clerk) 2010]**
(a) H (b) I (c) Y (d) X
(e) N

20. If the 2nd half of the English alphabet is written in backward order, then which letter comes 5th to the left of the 20th letter from left? **[PNB (PO) 2011]**
(a) J (b) H (c) Y (d) Z
(e) X

21. Which letter will be midway between 6th letter from left and 14th letter from the left in the English alphabet?
(a) K (b) J
(c) I (d) L

22. Which letter comes in the middle of 20th letter from left and 21st letter from right? **[PNB (PO) 2011]**
(a) L
(b) M
(c) N
(d) O
(e) No letter possible

23. Find the middle letter between 7th letter from start and 14th letter from end in the English alphabet. **[Allahabad Bank (Clerk) 2011]**

(a) H (b) I (c) J (d) K
(e) No letter possible

24. If the 1st half of the English alphabet is reversed and so is the 2nd half, then which letter is 7th to the right of the 12th letter from the left side?

(a) S (b) U (c) R (d) T

25. Find the middle letter between 4th and 16th letters in the English alphabet. **[SBI (PO) 2004]**

(a) J (b) K (c) I (d) L
(e) None of these

26. If the first and second letters in the word 'COMMUNICATIONS' were interchanged, also the third and the fourth letters, the fifth and sixth letters, and so on. Which letter would be the tenth letter counting from your right? **[SSC (CGL) 2012]**

(a) U (b) A (c) T (d) N

27. If every alternate letter in the word 'SOLITARY' starting from the 1st letter is replaced by the previous letter and each of the remaining letters is replaced by the next letter in the English alphabet, which of the following will be the 3rd letter from the right end after the substitution?

(a) B (b) S (c) Z (d) K

28. How many such letters are there in the word 'CATEGORY' each of which is as far away from the beginning of the word as when they are arranged in alphabetical order? **[SBI (PO) 2007]**

(a) None (b) One (c) Two (d) Three
(e) More than three

29. If the letters of the word 'VERTICAL' are arranged alphabetically, how many letters will remain at the same position? **[Syndicate Bank (Clerk) 2009]**

(a) Four (b) Three (c) Two (d) One
(e) None of these

30. How many such letters are there in the word 'MONKEY' which remain the same in its position, if the letters are arranged in descending order alphabetically?

(a) None (b) One
(c) Two (d) Three

31. How many such letters are there in the word 'MARTINA'. Which remain same in its position, if they are arranged in alphabetical order?

(a) One (b) Two
(c) Three (d) Four

32. If the last four letters of the word 'CONCENTRATION' are written in reverse order followed by next two in reverse order and next three in the reverse order. Counting from the end, which letter would be eighth in the new arrangement? **[CMAT 2013]**

(a) O (b) I (c) N (d) T

33. If each alphabet in the word 'FRACTION' is arranged in alphabetical order and then each vowel is changed to the next letter in the English alphabetical series and each consonant is changed to previous letter in English alphabetical series, which of the following will be 4th from the right side of the new arrangement thus formed? **[PNB (PO) 2010]**

(a) M (b) T (c) P (d) E
(e) Q

34. Each consonant in the word 'TIRADES' is replaced by the previous letter and each vowel is replaced by the next letter in the English alphabet and the new letters are rearranged alphabetically which of the following will be the fourth from the right end? **[SBI (PO) 2011]**

(a) F (b) J (c) Q (d) C
(e) None of these

35. If each consonant in the word 'TOLERANT' is replaced by the previous letter in the English alphabet and each vowel in the word is replaced by the next letter in the English alphabet and a new set of letters is arranged alphabetically, which of the following will be the 4th from the right end after the replacement? **[Andhra Bank (PO) 2009]**

(a) M (b) P (c) Q (d) K
(e) None of these

36. In case of how many letters of the word 'RAIMENT' will their order in the word remains same when the letters are arranged in the alphabetical order ? **[IDBI Bank (Clerk) 2010]**

(a) Nil (b) Three (c) One (d) Two
(e) None of these

37. In the case of how many letters of the word 'FAINTS', will their order in the word remains the same when the letters are arranged in the alphabetical order? **[Canara Bank (Clerk) 2011]**

(a) Two (b) One (c) Three (d) Nil
(e) None of these

38. If the letters of the word 'DOLPHIN' are arranged as they appear in the English alphabetical order, which of the following letters will be the 5th from left? **[UP B.Ed. 2011]**

(a) O (b) D
(c) I (d) None of these

39. The letters in the word 'MORTIFY' are changed in such a way that the vowels are replaced by the previous letter in the English alphabet and the consonants are replaced by the next letter in the English alphabet. Which of the following will be the third letter from the right end of the new set of letters?

(a) S
(b) H
(c) G
(d) None of the above

40. How many such letters are there in the word 'TIGER' which remain same in its position, if the letters are arranged in ascending order alphabetically?

(a) None (b) One (c) Two (d) Three

41. Each vowel in the word 'JOURNEY' is replaced by the previous letter in the English alphabet and each consonant is replaced by the next letter in the English alphabet. Then, the substitute letters are arranged in alphabetical order. Which of the following will be the 5th from the left end? **[PNB (PO) 2009]**

(a) S (b) T (c) N (d) O
(e) None of these

Response & Interpretations

1. *(a)* Position of S from left = 19
∴ Position of S from right = 27 – 19 = 8

2. *(a)* From CFILORUX, Position of L from left = 12

3. *(c)* 7th letter from right = (27 – 7) th = 20th letter from left = T

4. *(a)* 16th letter from right = (27 – 16)th = 11th letter from left = K

5. *(b)* Required letter = (27 – 10)th = 17th letter from left = Q

6. *(d)* 5th letter to the left of M in the backward order
= 5th letter to the right of M in forward order
= 5th letter after M in the forward order
= (13 + 5)th letter in the forward order
= 18th letter in the forward order = R

∵ Position of M in forward order alphabet = 13

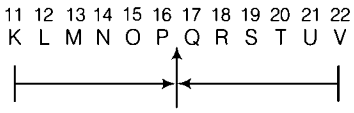
7. *(a)* Position of R from left = 18
∴ 5th letter to the left of R = 5th letter before R
= (18 – 5)th = 13 th letter = M

8. *(d)* 7th letter to the right of K in backward order
= 7th letter to the left of K in forward order
= 7th letter before K in forward order
= (11 – 7)th letter in the forward order
= 4th letter in the forward order = D

9. *(b)* 7th letter from left = G
∴ 8th letter to the right of G = (7 + 8) th letter from left
= 15th letter from left = O

10. *(d)* 6th letter from left = F
∴ 14th letter to the right of F = (6 + 14) th letter from left
= 20th letter from left = T

11. *(d)* Position of K = 11
Position of V = 22



No middle letter

or
Position of K = 11
Position of V = 22

As $\left(\frac{11+22}{2}\right) = \frac{33}{2}$ is not exactly divisible by 2.

Hence, no middle letter is possible.

12. *(a)* 7th letter from right = (27 – 7)th = 20th letter from left
∴ Required middle letter = $\frac{8+20}{2}$ = 14th letter from left = N

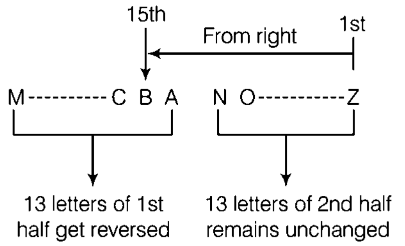
13. *(c)* 18th letter from left = R
∴ 10th letter to the left of R = 10th letter before R
= (18 – 10)th = 8th letter from left = H

14. *(c)* 10th letter to the left of 10th letter from right in reverse order = 10th letter to the right of 10th letter in forward order.
= 10th letter after 10th letter in forward order
= (10 + 10)th letter = 20th letter in forward order = T

15. *(c)* 11th letter from right in reverse order
= 11th letter in forward order = K
Now, 7th letter to the left of K in reverse order
= 7th letter to the right of K in forward order
= 7th letter after K in forward order
= Position of K in forward order + 7
= (11 + 7) th letter in forward order
= 18th letter in forward order
= R

16. *(a)* 11th letter form left in the reverse order
= (27 – 11)th letter from left in forward order
= 16th letter from left in forward order
= P
Now, 7th letter to the left of 16th letter in reverse order
= 7th letter to the right of 16th letter in forward order
= 7th letter after 16th letter in forward order
= (16 + 7)th letter in forward order
= 23rd letter in forward order = W

17. (*b*)


15th
From right
1st
M----------C B A N O-----------Z
13 letters of 1st half get reversed
13 letters of 2nd half remains unchanged

18. (*b*) 15th letter falls in the 1st half which remains unchanged. Hence, 15th letter has no relation with the change of 2nd half *i.e.,* reverse order of the last 13 letters of English alphabet.

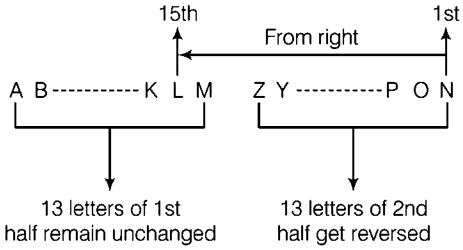
∴ Required 15th letter from right

= (27 − 15)th

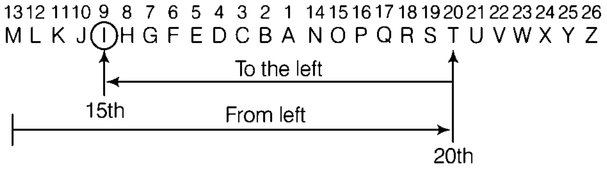
= 12th letter from left = L

or

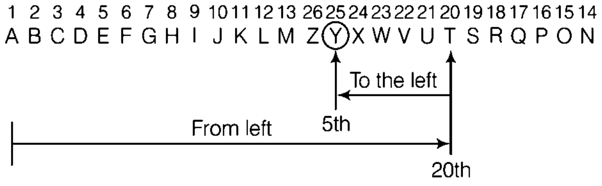
Let us see


15th
From right
1st
A B-----------K L M Z Y -----------P O N
13 letters of 1st half remain unchanged
13 letters of 2nd half get reversed

19. (*b*)


13 12 11 10 9 8 7 6 5 4 3 2 1 14 15 16 17 18 19 20 21 22 23 24 25 26
M L K J I H G F E D C B A N O P Q R S T U V W X Y Z
To the left
15th
From left
20th

20. (*c*)


1 2 3 4 5 6 7 8 9 10 11 12 13 26 25 24 23 22 21 20 19 18 17 16 15 14
A B C D E F G H I J K L M Z Y X W V U T S R Q P O N
To the left
From left
5th
20th

21. (*b*) Middle letter between 6th and 14th letter from left

$$= \left(\frac{6+14}{2}\right)\text{th letter from left}$$

$$= \left(\frac{20}{2}\right)\text{th} = 10\text{th letter from left} = J$$

22. (*b*) 21st letter from right = (27 − 21) = 6th letter from left

$$\therefore \text{ Required middle letter} = \frac{20+6}{2} = \frac{26}{2}$$

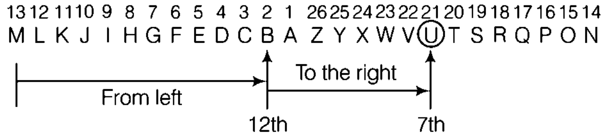
= 13th letter from left = M

23. (*c*) 14th letter from end = (27 − 14) = 13th letter from start

$$\therefore \text{ Required middle letter} = \frac{7+13}{2} = \frac{20}{2}$$

= 10th letter from left = J

24. (*b*)

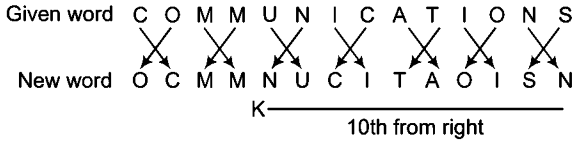

13 12 11 10 9 8 7 6 5 4 3 2 1 26 25 24 23 22 21 20 19 18 17 16 15 14
M L K J I H G F E D C B A Z Y X W V U T S R Q P O N
To the right
From left
12th
7th

Hence, option (b) is correct.

25. (*a*) Required middle letter $= \frac{4+16}{2} = \frac{20}{2}$

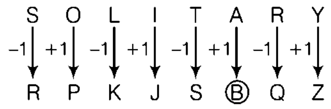
= 10th letter from left = J

26. (*d*) According to the question,


Given word C O M M U N I C A T I O N S
New word O C M M N U C I T A O I S N
K
10th from right

Hence, required letter is N.

27. (*a*) After making the change as given in the question, we get the following arrangement


S O L I T A R Y
−1 +1 −1 +1 −1 +1 −1 +1
R P K J S B Q Z

Hence, the 3rd letter from the right end is 'B'.

28. (*b*) The given word, C A T E G O R $\boxed{Y}$

Alphabetically, A C E G O R T $\boxed{Y}$

We find that, only Y maintains its position when the word is arranged in alphabetical order.

29. (*e*) Original word, V E R T I C A L

Alphabetically, A C E I L R T V

There is no letter which will remain at the same position.

30. (*c*) M $\boxed{O}$ $\boxed{N}$ K E Y

Y $\boxed{O}$ $\boxed{N}$ M K E

So, such type of letters are O and N.

31. (*a*) M $\boxed{A}$ R T I N A

A $\boxed{A}$ I M N R T

So, only one letter A will remain at the same position.

32. (*a*) Original order C O N C E N T R A T I O N

After arrangement N O I T A R T N E

33. (*a*) Original word, F R A C T I O N

I. Change, A C F I N O R T

II. Change, B B E J Ⓜ P Q S

Clearly, M will be fourth from the right.

34. (*b*) Original word, T I R A D E S

I. Change, S J Q B C F R

II. Change, B C F Ⓙ Q R S

Hence, J will be fourth from the right.

35. (*b*) Original word, T O L E R A N T

I. Change, S P K F Q B M S

II. Change, B F K M Ⓟ Q S S

Clearly, P will be fourth from the right

36. (*b*) R A Ⓘ Ⓜ E N Ⓣ
A E Ⓘ Ⓜ N R Ⓣ

Hence, there are three such type of letters

37. (*a*) F A Ⓘ Ⓝ T S
A F Ⓘ Ⓝ S T

Clearly, there are two letters of such type.

38. (*d*) Original word, D O L P H I N
New arrangement, D H I L N O P
↓ ↓ ↓ ↓ ↓
1 2 3 4 5
From left →

Here, N is not present in any option, so (d) is the correct answer.

39. (*b*)

M O R T I F Y
+1 –1 +1 +1 –1 +1 +1
↓ ↓ ↓ ↓ ↓ ↓ ↓
N N S U Ⓗ G Z
← Third from right

40. (*a*) T I G E R
E G I R T

So, none of the letters have same position.

41. (*a*) Given word, J O U R N E Y
+1 –1 –1 +1 +1 –1 +1
↓ ↓ ↓ ↓ ↓ ↓ ↓
On substituting, K N T S O D Z
Alphabetical order, D K N O Ⓢ T Z
↓ ↓ ↓ ↓ ↓
1 2 3 4 5
Fifth from left →

Type 2 Letters Pair Problem

If between any two letters of a word, there exist as same number of letters as in the English alphabet, then these two letters are called a letter pair. In this type of questions, a word is given and it is asked to find the different letter pair the word can have.

Important Points about Letter Pair

(i) A word may have more than one letter pair.
(ii) A letter in a word can make more than one letter pair.
(iii) If you are asked to find letter pairs, according to the English alphabet, you have to count both ways i.e., from left to right and right to left or forward and backward order.
(iv) If you are asked to find letter pairs according to the sequence of alphabet, then you have to count only from left to right or forward order.

***Ex* 13** How many such pairs of letters are there in the word 'SOUTHERN' each of which has as many letters between them as in the English alphabet?

(a) None (b) One (c) Two (d) Three

Sol. (c) Let us see

SOUTHERN

So, letter pairs are SU and TU. Hence, option (c) is correct answer.

Practice Corner **3.2**

Build your Confidence...

Directions (Q. Nos. 1-36) In each of the following questions a word is given. How many pairs of letters are there in these words which have as many letters between them as in the English alphabet?

1. ABLE
(a) One (b) Two
(c) Nil (d) Cannot be determined

2. ACTION
(a) Three (b) Nil (c) One (d) Two

3. DELIBERATE
(a) One (b) Two (c) Four (d) Three

4. JOURNEY **[UCO Bank (PO) 2011]**
(a) None (b) One (c) Two (d) Three
(e) None of these

5. APPLE **[PNB (PO) 2009]**
(a) Nil (b) One (c) Two (d) Three
(e) More than three

6. CONFUSED **[LIC (ADO) 2011]**
(a) Nil (b) One (c) Two (d) Three
(e) More than three

7. PREAMBLE **[Syndicate Bank (Clerk) 2011]**
(a) Nil (b) One (c) Two (d) Three
(e) More than three

8. PENCIL
(a) Nil (b) One (c) Two (d) Three

9. STREAMING **[IBPS (Clerk) 2011]**
(a) Nil (b) One (c) Two (d) Three
(e) More than three

10. CHRONICLE **[PNB (PO) 2010]**
(a) Nil (b) One (c) Two (d) Three
(e) More than three

11. OBJECTIVE
(a) None (b) One
(c) Two (d) More than three

12. TRIBUNAL **[IOB (PO) 2010]**
(a) None (b) One (c) Two (d) Three
(e) More than three

13. ADJUSTING
(a) None (b) One (c) Two (d) Three

14. CONTRAST
(a) None (b) One (c) Two (d) Three

15. TERMINATE **[PNB (PO) 2011]**
(a) None (b) One (c) Two (d) Three
(e) More than three

16. STATE **[Allahabad Bank (Clerk) 2011]**
(a) None (b) One (c) Two (d) Three
(e) More than three

17. STONED **[LIC (ADO) 2011]**
(a) None (b) One (c) Two (d) Three
(e) More than three

18. TERMITE
(a) None (b) One (c) Two (d) Three

19. RECRUIT **[PNB (PO) 2011]**
(a) None (b) One (c) Two (d) Three
(e) More than three

20. ENGLISH **[SBI (PO) 2011]**
(a) None (b) One (c) Two (d) Three
(e) More than three

21. CREDIBLE
(a) None (b) One (c) Two (d) More than three

22. DOMESTIC
(a) None (b) One (c) Two (d) Three

23. SHIFTED
(a) None (b) One (c) Two (d) Three

24. DOCUMENT
(a) None (b) One (c) Two (d) Three

25. CHILDREN
(a) Three (b) Five (c) Four (d) Two

26. CONSTABLE
(a) None (b) One (c) Two (d) Three

27. DELUSION
(a) None (b) One
(c) Two (d) More than three

28. FOREIGN
(a) None (b) One
(c) Two (d) Three

29. MODERATE
(a) None (b) One
(c) Two (d) More than three

30. PHYSICAL
(a) None (b) One (c) Two (d) Three

31. BEHAVIOUR
(a) None (b) One (c) Two (d) Three

32. SUBSTANCE **[IBPS (PO) 2012]**
(a) None (b) One (c) Two (d) Three
(e) More than three

33. GLIMPSE **[PNB (PO) 2010]**
(a) None (b) One (c) Two (d) Three
(e) More than three

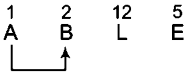
34. EXAMINATION **[LIC (ADO) 2011]**
(a) None (b) One (c) Two (d) Three
(e) More than three

35. CAMBRIDGE
(a) None (b) One (c) Two (d) Three

36. PERFORATE **[PNB (PO) 2010]**
(a) None (b) One (c) Two (d) Three
(e) More than three

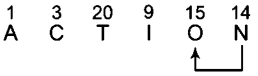
Response & Interpretations

1. (a)



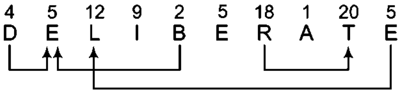
∴ Letter pair = AB ⇒ One

2. (c)


1 3 20 9 15 14
A C T I O N

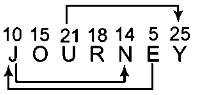
∴ Letter pair = NO ⇒ One

3. (c)


4 5 12 9 2 5 18 1 20 5
D E L I B E R A T E

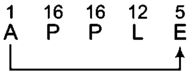
∴ Letter pairs = DE, BE, EL, RT ⇒ Four

4. (d)


10 15 21 18 14 5 25
J O U R N E Y

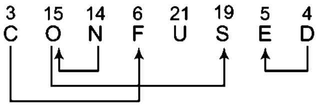
∴ Such pairs = JN, UY, EJ ⇒ Three

5. (b)


1 16 16 12 5
A P P L E

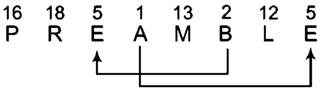
∴ Letter pair = AE ⇒ One

6. (e)


3 15 14 6 21 19 5 4
C O N F U S E D

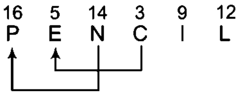
∴ Letter pairs = CF, NO, OS, ED ⇒ Four

7. (c)


16 18 5 1 13 2 12 5
P R E A M B L E

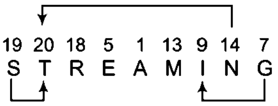
∴ Letter pairs = BE, AE ⇒ Two

8. (c)


16 5 14 3 9 12
P E N C I L

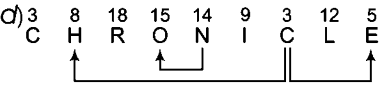
∴ Letter pairs = CE, NP ⇒ Two

9. (d)


19 20 18 5 1 13 9 14 7
S T R E A M I N G

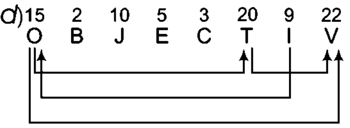
∴ Letter pairs = ST, GI, NT ⇒ Three

10. (d)


3 8 18 15 14 9 3 12 5
C H R O N I C L E

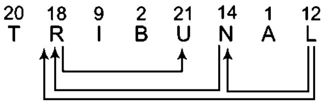
∴ Letter pairs = CH, CE, NO ⇒ Three

11. (d)


15 2 10 5 3 20 9 22 5
O B J E C T I V E

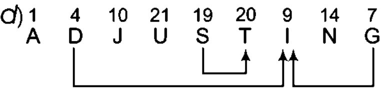
∴ Letter pairs = IO, OV, OT, TV ⇒ Four

12. (e)


20 18 9 2 21 14 1 12
T R I B U N A L

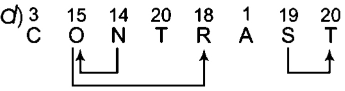
∴ Letter pairs = RU, NR, LN, LR ⇒ Four

13. (d)


1 4 10 21 19 20 9 14 7
A D J U S T I N G

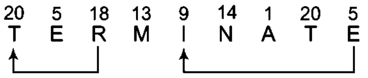
∴ Letter pairs = DI, GI, ST ⇒ Three

14. (d)


3 15 14 20 18 1 19 20
C O N T R A S T

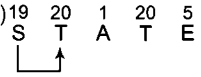
∴ Letter pairs = NO, OR, ST ⇒ Three

15. (c)


20 5 18 13 9 14 1 20 5
T E R M I N A T E

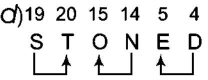
∴ Letter pairs = RT, EI ⇒ Two

16. (b)


19 20 1 20 5
S T A T E

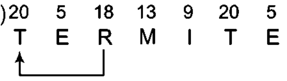
∴ Letter pair = ST ⇒ One

17. (d)

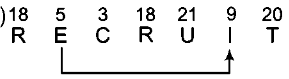

19 20 15 14 5 4
S T O N E D

∴ Such pairs = ST, NO, DE ⇒ Three

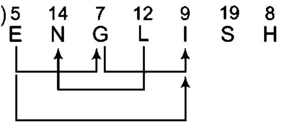
18. (b)


20 5 18 13 9 20 5
T E R M I T E

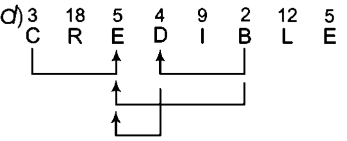
∴ Letter pairs = RT ⇒ One

19. (*b*)

18 5 3 18 21 9 20
R E C R U I T

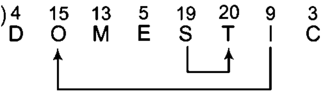
∴ Letter pair = EI ⇒ One

20. (*e*)

5 14 7 12 9 19 8
E N G L I S H

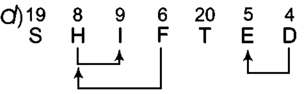
∴ Letter pairs = EG, GI, LN, EI ⇒ Four

21. (*a*)

3 18 5 4 9 2 12 5
C R E D I B L E

∴ Letter pairs = CE, BD, BE, DE = Four

22. (*c*)

4 15 13 5 19 20 9 3
D O M E S T I C

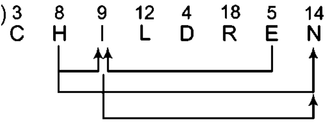
∴ Letter pairs = ST, IM ⇒ Two

23. (*d*)

19 8 9 6 20 5 4
S H I F T E D

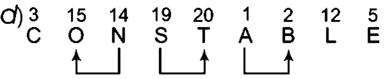
∴ Letter pairs = HI, DE, FH ⇒ Three

24. (*a*) 4 15 3 21 13 5 14 20
D O C U M E N T

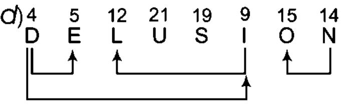
∴ Letter pair = None

25. (*c*)

3 8 9 12 4 18 5 14
C H I L D R E N

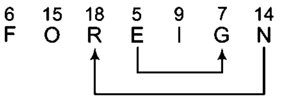
∴ Letter pairs = HI, IN, EI, HN ⇒ Four

26. (*d*)

3 15 14 19 20 1 2 12 5
C O N S T A B L E

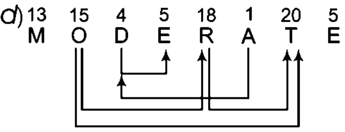
∴ Letter pairs = NO, ST, AB ⇒ Three

27. (*d*)

4 5 12 21 19 9 15 14
D E L U S I O N

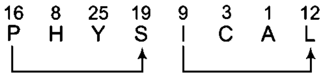
∴ Letter pairs = DE, NO, IL, EI, DI ⇒ Five

28. (*c*)

6 15 18 5 9 7 14
F O R E I G N

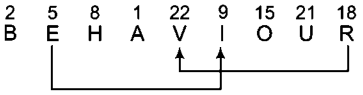
∴ Letter pairs = EG, NR ⇒ Two

29. (*d*)

13 15 4 5 18 1 20 5
M O D E R A T E

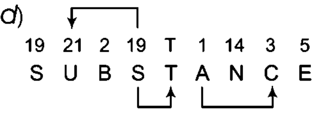
∴ Letter pairs = DE, AD, RT, OT, OR ⇒ Five

30. (*c*)

16 8 25 19 9 3 1 12
P H Y S I C A L

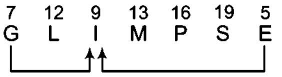
∴ Letter pairs = IL, PS ⇒ Two

31. (*c*)

2 5 8 1 22 9 15 21 18
B E H A V I O U R

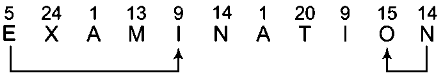
∴ Letter pairs = EI, RV ⇒ Two

32. (*d*)

19 21 2 19 T 1 14 3 5
S U B S T A N C E

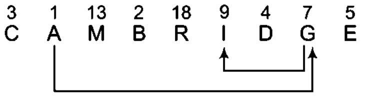
∴ Letter pairs = ST, AC, SU ⇒ Three

33. (*c*)

7 12 9 13 16 19 5
G L I M P S E

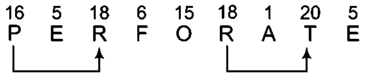
∴ Letter pairs = GI, EI ⇒ Two

34. (*c*)

5 24 1 13 9 14 1 20 9 15 14
E X A M I N A T I O N

∴ Letter pairs = EI, NO ⇒ Two

35. (*c*)

3 1 13 2 18 9 4 7 5
C A M B R I D G E

∴ Letter pairs = AG, GI ⇒ Two

36. (*c*)

16 5 18 6 15 18 1 20 5
P E R F O R A T E

∴ Letter pairs = PR, RT ⇒ Two

Type 3 Word Formation and Letter Rearrangement

In this type, the questions asked can be further divided into four types which are explained as under

A. Changing Letters of a Meaningful Word

In this type of questions, a meaningful word is given followed by some directions. Based on these directions, we have to arrange the letters of that word and then it is asked to find a letter from left or right end.

Example given below will give a better idea about the type of questions asked.

***Ex* 14** If in the word 'CONGREGATION', 1st and 3rd letters are interchanged, 2nd and 4th letters are interchanged, 5th and 7th letters are interchanged and this interchange goes on in the same manner, then find the 10th letter from right in the new arrangement.

(a) E (b) C (c) G (d) P

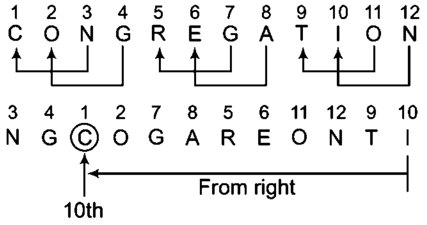
Sol. (*b*) The correct letter is C.

Alternate Method

10th letter from right in the original word = (13 – 10) = 3 rd letter from left in original word = N

As, N is interchanged with C in the new arrangement

∴ 10th letter from right in the new arrangement = C



B. Forming a Meaningful Word with Selected Letters of a Word

In this type of questions, it is asked whether a word can be formed or not from the selected letters of a meaningful word.

***Ex* 15** If it is possible to make only one meaningful word with the 3rd, the 6th, the 8th and the 11th letters of the word 'COMPUTERISE', using each letter only once in the word, last letter of the word is your answer. If no such word can be formed, your answer is 'X' and if more than one such word can be formed, your answer is 'Z'.

(a) M (b) T (c) R (d) X (e) Z

Sol. (*a*) Let us see

1 2 ③ 4 5 ⑥ 7 ⑧ 9 10 ⑪
C O M P U T E R I S E

From letters M, T, R and E, the only word TERM can be formed.

∴ Last letter of the word 'TERM' = M

C. Forming Meaningful Word(s) with the Different Letters of a Meaningful Word

Here, the question asked is based on formation of new word(s) from the different letters of a given words.

***Ex* 16** How many words can be formed using letters of the word 'DESIGN' unconditionally?

(a) More than 4 (b) Less than 3 (c) Exactly 4 (d) More than 8

Sol. (*d*) Let us see
Required words = DEN, DIG, DING, SIN, SING, SIGN, SIDE DIE, SEND

D. Suitable Word Formation

In this type of questions, a main/question word is given and candidate have to choose that word, which can or cannot be formed from the main/question word.

***Ex* 17** Given below is a word, followed by four other words, one of which can be formed by using the letters of the given word. Find that word. **[SSC (10 + 2) 2009]**

TEACHER

(a) RATE (b) TEEN (c) RENT (d) TOUCH

Sol. (*a*) 'RATE' is the only word which can be formed by using the letters of given word 'TEACHER'.

***Ex* 18** Given below is a word, followed by four other words, one of which cannot be formed by using the letters of the given word. Find that particular word.

POTENTIAL

(a) TENT (b) LITTLE (c) POTENT (d) TITLE

Sol. (*b*) 'LITTLE' is the only word which cannot be formed by using the letters of given word POTENTIAL. The reason for not being formed is an extra 'L'.

Practice Corner 3.3

Build your Confidence...

1. If the positions of the letters in the word 'ORGANISE' are rearranged in such way that the position of the 1st and the 2nd letters are interchanged, similarly the position of the 3rd and the 4th letters are interchanged and so on, which of the following will be the 3rd from the right end after the rearrangement? **[Canara Bank (Clerk) 2010]**

(a) N (b) I (c) R (d) A
(e) None of these

2. If it is possible to make only one meaningful word with the 3rd, 7th, 8th and 10th letters of the word 'COMPATIBILITY', which of the following would be the last letter of that word? If no such word can be made, give 'X' as your answer and if more than one such word can be formed, give your answer as Y. **[Allahabad Bank (Clerk) 2009]**

(a) I (b) B (c) L (d) X
(e) Y

3. If it is possible to make only one meaningful word with the 1st, 2nd, 3rd and 5th letters of the word 'TECHNOLOGY', which of the following would be the 3rd letter of that word? If no such word can be made, give 'X' as your answer and if more than one such word can be formed, give your answer as 'Y'. **[SBI (PO) 2009]**

(a) C (b) T (c) N (d) X
(e) Y

4. If it is possible to make only one meaningful English word from the 2nd, the 5th, the 7th and the 8th letters of the word 'PHYSICAL', using each letter only once, 2nd letter of that word is your answer. If more than one such word can be formed your answer is M. If no such word can be formed your answer is N. **[Syndicate Bank (Clerk) 2009]**

(a) I (b) A (c) L (d) M
(e) N

5. If it is possible to make only one meaningful word from the 1st, the 3rd, the 6th and the 8th letters of the word 'EXAMINATION', using each letter only once, 1st letter of that word is your answer. If more than one such word can be formed your answer is 'X' and if no such word can be formed your answer is 'Y'. **[PNB (PO) 2010]**

(a) A (b) T (c) N (d) X
(e) Y

6. If it is possible to make only one meaningful word with the 3rd, 4th, 8th and 9th letters of the word 'CENTURIES' which would be the 2nd letter of the word from left? If more than one such word can be formed, give 'A' as the answer. If no such word can be formed, give 'Z' as your answer. **[SBI (PO) 2010]**

(a) A (b) N (c) T (d) E
(e) Z

7. If it is possible to make only one meaningful word with the 1st, 2nd, 6th and 10th letters of the word 'DISCLAIMER', which of the following will be the 3rd letter from left? If no such word can be made, give 'X' as your answer and if more than one such word can be made give 'Y' as your answer. **[CBI (Clerk) 2008]**

(a) I (b) R (c) D (d) X
(e) Y

8. If it is possible to make only one meaningful word from the 1st, the 3rd, the 5th and the 8th letters of the word 'ENTERPRISE' using each letter only once, 1st letter of the word is your answer. If more than one such word can be made your answer is 'X' and if no such words can be made your answer is 'Y'. **[Syndicate Bank (PO) 2009]**

(a) P (b) S (c) T (d) X
(e) Y

9. If it is possible to make only one meaningful word from the 3rd, the 6th, the 9th and the 10th letters of the word 'PARENTHESIS', using each letter only once, last letter of the word is your answer. If no such word can be formed your answer is 'X' and if more than one such word can be formed your answer is 'Y'. **[UBI (PO) 2007]**

(a) R (b) T
(c) S (d) X
(e) Y

10. If it is possible to make only one meaningful English word with the 4th, the 6th, the 9th and the 11th letters of the word 'QUALIFICATION', which of the following will be the 3rd letter of that word? If more than one such word can be formed, give 'M' as the answer and if no such word can be formed give 'N' as the answer. **[Andhra (Bank) 2011]**

(a) A (b) I
(c) L (d) M
(e) N

11. If it is possible to make only one meaningful word from the 2nd, the 4th, the 6th and the 9th letters of the word 'PROACTIVE', using each letter only once, 2nd letter of that word is your answer. If more than one word can be formed your answer is 'M' and if no such word can be formed your answer is 'N'. **[UCO Bank (PO) 2009]**

(a) A (b) E
(c) T (d) M
(e) N

12. How many meaningful English words can be made with the letters ESLA, using each letter only once in each word? **[UCO Bank (Clerk) 2009]**

(a) None (b) One
(c) Two (d) Three
(e) More than three

13. How many meaningful three letter words can be formed with the letters AER, using each letter only once in each word? **[UCO Bank (Clerk) 2009]**

(a) None (b) One (c) Two (d) Three
(e) Four

14. How many meaningful English words can be made with the letters NREA, using each letter only once in each word?

(a) None (b) One (c) Two (d) Three

15. How many meaningful English words can be made with the letters of NDOE using each letter only once in each word? **[IOB (PO) 2009]**

(a) None (b) One (c) Two (d) Three
(e) More than three

16. How many meaningful four English words can be made with letters TPSI, using each letter only once in each word?

(a) One (b) Two (c) Three (d) Four

17. How many meaningful three letters English words can be formed with the letters WNO using each letter only once in each word? **[Syndicate Bank (Clerk) 2009]**

(a) None (b) One (c) Two (d) Three
(e) Four

18. How many meaningful English words can be formed from the letters ADRW, using each letter only once in each word?

(a) None (b) One (c) Two (d) Three

19. How many meaningful English words can be formed with the letters LAME, using each letter only once in each word?

(a) None (b) One (c) Two (d) Three

20. How many meaningful English words can be formed with the letters LEGU, using each letter only once in each word? **[PNB (PO) 2010]**

(a) None (b) One (c) Two (d) Three
(e) More than three

21. How many meaningful English words can be made with the letters DLEI, using each letter only once in each word? **[UBI (PO) 2010]**

(a) None (b) One (c) Two (d) Three
(e) More than three

22. How many meaningful English words can be made with the letters DREO, using each letter only once in each word? **[UBI (PO) 2010]**

(a) None (b) One (c) Two (d) Three
(e) More than three

23. How many meaningful English words can be made with the letters IFEL, using each letter only once in each word? **[SBI (PO) 2010]**

(a) None (b) One
(c) Two (d) Three
(e) More than three

24. How many meaningful English words can be formed with the letter ITRM, using each letter only once in each word? **[SBI (PO) 2010]**

(a) None (b) One
(c) Two (d) Three
(e) More than three

25. How many meaningful English words can be made with the letters ONDE, using each letter only once in each word?

(a) None (b) One (c) Two (d) Three

26. How many meaningful English words can be formed made with the letters ESTR, using each letter only once in each word?

(a) None (b) One (c) Two (d) Three

27. How many meaningful words can be formed from the word ALEP beginning with 'P' and without repeating any letter within that word?

(a) One (b) Three (c) Five (d) Two

28. How many meaningful four letter English words can be formed with the letters KEAB, using each letter only once in each word?

(a) One (b) Two (c) Three (d) Four

29. How many meaningful English words can be made from the letters EOPR, using each letter only once? **[SBI (PO) 2008]**

(a) None (b) One (c) Two (d) Three
(e) More than three

30. How many three letter meaningful words can be formed from the word TEAR beginning with 'A' and without repeating any letter within that word?

(a) One (b) Three (c) Five (d) Two

31. How many such letters are there in the word 'CATEGORY' which remains same in its position, when they are arranged in alphabetical order?

(a) None (b) One (c) Two (d) Three

Directions (Q. Nos. 32-35) In each of the following questions a word is given, followed by four other words, one of which can be formed by using the letters of given word, then find the word.

32. RECOMMENDATION **[SSC (FCI) 2012]**

(a) COMMUNICATE (b) REMINDER
(c) MEDICO (d) MEDIATES

33. MEASUREMENT **[SSC (Steno) 2012]**

(a) ASSURE (b) MANTLE
(c) MASTER (d) SUMMIT

34. MEASUREMENTED **[SSC (Multitasking) 2012]**

(a) MASTERO (b) RENT (c) TENANT (d) INSURANCE

35. CORRESPONDING

(a) DISCERN (b) RESPONSE
(c) REPENT (d) CORRECT

Directions (Q. Nos 36-43) In each of the following questions a word is given followed by four other words, one of which cannot be formed by using the letters of the given word. Find that particular word.

36. IMPOSSIONABLE **[SSC (Multitasking) 2013]**

(a) IMPOSSIBE (b) POSSIBLE (c) IMPOSE (d) IMPASSIVE

37. CONSTITUTIONAL **[SSC (CGL) 2012]**

(a) CONSULT (b) LOCATION (c) TUTION (d) TALENT

38. COURAGEOUS **[SSC (CGL) 2013]**

(a) SECURE (b) ARGUE (c) COURSE (d) GRACE

39. REPUTATION **[SSC (CGL) April 2014]**

(a) TUTOR (b) PONDER (c) REQUIRE (d) RETIRE

40. MERCHANDISE **[SSC (CGL) April 2014]**

(a) CHANGE (b) MESH (c) DICE (d) CHARM

41. PORTFOLIO **[SSC (Multitasking) 2014]**

(a) RIFT (b) ROOF (c) FORT (d) PORTICO

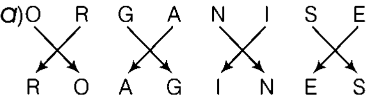
42. INTERVENTION **[SSC (10+2) 2013]**

(a) ENTER (b) INTENTION
(c) INVENTION (d) ENTERTAIN

43. COMMUNICATION **[SSC (Multitasking) April 2014]**

(a) ACTION (b) UNION (c) NATION (d) UNISON

Response & Interpretations

1. (*a*)


Hence, N is 3rd from right after rearrangement.

2. (*b*) C O Ⓜ P A T Ⓘ Ⓑ I Ⓛ I T Y
3rd 7th 8th 10th
The only word formed = LIMB ∴ Last letter = B

3. (*c*) Ⓣ Ⓔ Ⓒ H Ⓝ O L O G Y
1st 2nd 3rd 5th
The only one word formed = CENT ∴ Third letter = N

4. (*b*) P Ⓗ Y S Ⓘ C Ⓐ Ⓛ
2nd 5th 7th 8th
Word formed = HAIL ∴ Second letter = A

5. (*d*) Ⓔ X Ⓐ M I Ⓝ A Ⓣ I O N
1st 3rd 6th 8th
Meaningful words = NEAT, ANTE

6. (*a*) C E Ⓝ Ⓣ U R I Ⓔ Ⓢ
3rd 4th 8th 9th
∴ Words formed = NEST, NETS, SENT, TENS

7. (*e*) Ⓓ Ⓘ S C L Ⓐ I M E Ⓡ
1st 2nd 6th 10th
Words formed = ARID, RAID

8. (*d*) Ⓔ N Ⓣ E Ⓡ P R Ⓘ S E
1st 3rd 5th 8th
Meaningful words = TIRE, TIER, RITE

9. (*a*) P A Ⓡ E N Ⓣ H E Ⓢ Ⓘ S
3rd 6th 9th 10th
Meaningful word = STIR
∴ Required letter = R

10. (*b*) Q U A Ⓛ I Ⓕ I C Ⓐ T Ⓘ O N
4th 6th 9th 11th
Word formed = FAIL
∴ Required letter = I

11. (*d*) P Ⓡ O Ⓐ C Ⓣ I V Ⓔ
2nd 4th 6th 9th
Meaningful words = TEAR, RATE

12. (*c*) Required words = SALE, SEAL

13. (*d*) Required words = ARE, EAR, ERA

14. (*c*) Required words = NEAR, EARN

15. (*c*) Required words = NODE, DONE

16. (*c*) Required words = TIPS, PITS, SPIT

17. (*d*) Required words = NOW, WON, OWN

18. (*c*) Required words = DRAW and WARD

19. (*d*) Required words = LAME, MALE, MEAL

20. (*b*) Required word = GLUE

21. (*c*) Required words = LIED, IDLE

22. (*b*) Required word = RODE

23. (*c*) Required words = FILE, LIFE

24. (*b*) Required word = TRIM

25. (*c*) Required words = NODE, DONE

26. (*b*) Required word = REST

27. (*b*) Required words = PLEA, PALE, PEAL

28. (*b*) Required words = BEAK, BAKE

29. (*c*) Required words = PORE, ROPE

30. (*b*) Required words = ARE, ATE, ART

31. (*b*) Given word, C A T E G O R $\boxed{Y}$
Alphabetically, A C E G O R T $\boxed{Y}$
Clearly, only Y maintains its position when the letters of the word are arranged in alphabetical order.

32. (*c*) From the given word, 'MEDICO' is the only word which can be formed.

33. (*c*) By using the letters of the given word 'MEASUREMENT' we can form the word 'MASTER'.

34. (*b*) By using the letters of given word, 'RENT' is the only word which can be formed.

35. (*a*) By using the letters of given word 'CORRESPONDING', 'DISCERN', is the only word which can be formed.

36. (*d*) Clearly, 'IMPASSIVE', cannot be formed by letters of the given word due to absence of letter 'V".

37. (*d*) 'TALENT' word cannot be formed using the letters of the given word because letter E is not present in the given word.

38. (*a*) The word 'SECURE' cannot be formed from 'COURAGEOUS'.

39. (*a*) From the given word, 'TUTOR' is the only word which can be formed.

40. (*a*) From the given word, 'CHANGE' is the only word which cannot be formed due to the absence of letter 'G'.

41. (*d*) From the given word 'PORTICO' is the only word which cannot be formed due to the absence of letter 'C'.

42. (*d*) From the given word, 'ENTERTAIN' is the only word which can not be formed due to the absence of letter 'A'.

43. (*d*) By using the letters of the given word, 'COMMUNICATION', 'UNISON' is the only word which cannot be formed due to the absence of letter 'S'.

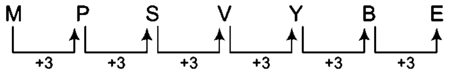
Type 4 Rule Detection

In this type of questions of alphabets, four options are given as the group of letters.Out of these four groups, candidates have to choose that one which follows a certain pattern in a particular manner. That pattern could be in increasing/decreasing order of same/different number.

***Ex* 19** Number of letters skipped in between adjacent letters in the series is two. Which of the following series observes this rule?

(a) MPSVYBE (b) QSVYZCF (c) SVZCGJN (d) ZCGKMPR

Sol. (a) According to the question,

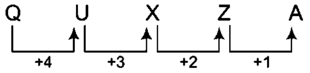


∴ Only option (a) is following the certain pattern in increasing order with same difference.

***Ex* 20** Number of letters skipped in between adjacent letters in the series decreases by one. Which of the following series is observing the rule?

(a) OUMYA (b) AEIKL (b) AZXUA (d) QUXZA

Sol. (*d*) According to the question



Therefore, option (d) is having the group of letters which follows the given rule.

Practice Corner **3.4**

Build your Confidence...

1. The letters skipped in between the adjacent letters in the series are followed by equal space. Which of the following series observes this rule?

(a) HKNGSW (b) RVZDFG (c) RVZDHL (d) SUXADF

2. Number of letters skipped in between adjacent letters in the series is two. Which one of the following alternatives observes this rule?

(a) SPMLI (b) TSPNKH (c) UROLIF (d) WTQNKJ

3. Select that series in which letters are not according to a general rule.

(a) CEGIKM (b) MORTVX
(c) PRTVXZ (d) ZBDFHJ

4. Number of the letters skipped in between adjacent letters of the series are increased by one. Which of the following series observes this rule?

(a) OIGDC (b) OMJFA
(c) OMKIG (d) ONLKJ

5. Select the series in which the letters skipped in between adjacent letters decrease in order.

(a) AGMRV (b) HNSWA
(c) NSXCH (d) SYDHK

6. Number of letters skipped in between adjacent letters in the series starting from behind decreases by one.Which of the following series observes this rule?

(a) DBPUY (b) DBUYP (c) DBYUP (d) DBYUP

7. Number of letters skipped in between adjacent letters in the series are increased by one. Which of the following alternatives observes this rule?

(a) KMPTY (b) IJKOT (c) HJMQT (d) DFIJK

8. In which of the following letters sequences, there is a letter leaving three letters of the alphabet in order, after the letters placed at odd-numbered positions and leaving two letters of the alphabet in order after the letters placed at even-numbered positions?

(a) ADFIKN (b) BEGJLN (c) CFHKLO (d) DFIKNP

9. Select that series in which letters are according to a general rule.

(a) NQUXBE (b) NQUXAE (c) NRUXBE (d) NQUYBE

10. Which of the following series observes the rule, "Skip in between adjacent letters, increasing one letter more each time to build a set of letters"?

(a) SUXBGN (b) SUXBGM (c) SUYBGM (d) SVXBGN

11. Number of letters skipped in between adjacent letters in the series decreases by one. Which of the following series is observing the rule?

(a) BGKNPR (b) CINRTU (c) EJNQST (d) LQUXAP

12. Number of letters skipped in between adjacent letters in the series increases by one.Which of the following series observes this rule?

(a) CPTOV (b) HCFKP (c) HJHQV (d) IKNRW

13. Which of the following series observes the rule., "Skip in between adjacent letters, increasing one letter more each time to build a set of letters"?

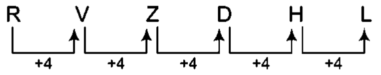
(a) ACFJLQ (b) BDGKPV
(c) CEHLQV (d) HILPUZ

14. Number of letters skipped in between the adjacent letters in the series are consecutive odd number. Which of the following series observes this rule?

(a) FINUD (b) FHLRZ (c) FINUC (d) FHLSZ

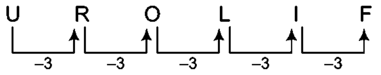
Response & Interpretations

1. (*c*) Let us see



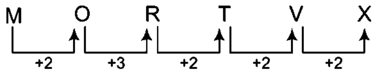
Now, it is clear that option (c) is correct answer.

2. (*c*) From the given question,



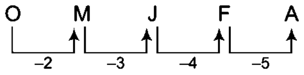
Clearly, only option (c) has the required group of letters.

3. (*b*) Let us see



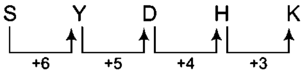
Clearly, only option (b) is having a group of letters which is not according to the general rule.

4. (*b*) As per the question,



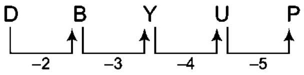
Clearly, only option (b) follows the given rule.

5. (*d*) According to the question,



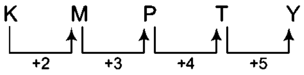
Clearly, only option (d) is having the letters according to the given rule.

6. (*d*) From the given question,



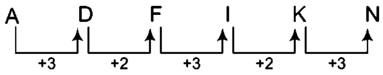
Now, it is clear that only DBYUP is a group of letters which follows the given rule.

7. (*a*) From the given question,



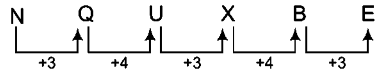
Clearly, only KMPTY having the series according to the given rule.

8. (*a*) From the given question,



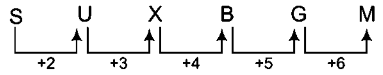
Clearly, only option (a) is having the given pattern in the question.

9. (*a*) According to the question,



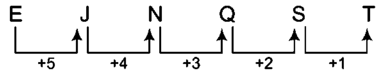
Here, general rule is followed by only option (a).

10. (*b*) From the given question,



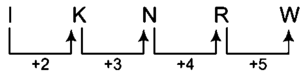
Clearly, only option (b) is having the series according to the given rule.

11. (*c*) According to the question,

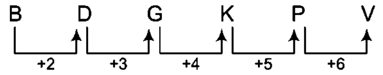


So, option (c) is having the group of letters which follows the given rule.

12. (*d*) Only option (d) is correct which follows the given pattern as given below

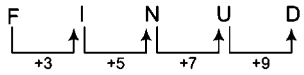


13. (*b*) According to the question,



Hence, only option (b) is following the given pattern.

14. (*a*) As per the question given,



Hence, option (a) is having the series according to the given rule.

Type 5 Finding Digits After Rearrangement

In this type of questions, a specified order or pattern is used to rearrange the positions of digits of the number. Then, either the number of those digits is found out whose positions remain unchanged after rearrangement or the digit at particular place from left or right of the number is to be found out. In some questions, generally five/six numbers of three digits are given and the digits of these numbers have to be rearranged according to the question. Finally, the candidate is required to find out a certain number/digit on the basis of new arrangement.

***Ex* 21** In the number 7524693, how many digits will be as far away from beginning of the number, if arranged in ascending order as they are in the number? **[PNB (Clerk) 2010]**

(a) None (b) One (c) Two (d) Three

Sol. (*b*) Let us see

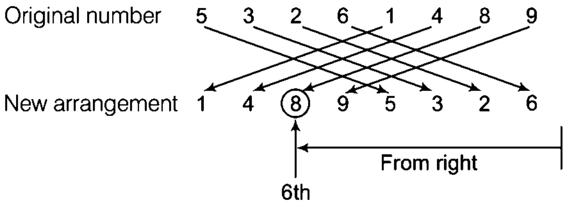
Original number	7	5	2	4	$\boxed{6}$	9	3
Ascending order	2	3	4	5	$\boxed{6}$	7	9

Hence, only one digit (*i.e.*, 6) remains at the same place as in the original number.

***Ex* 22** In the number 53261489, if first and fifth digits interchange their positions, second and sixth digits interchange their positions and further changes keep going on in the same manner, then which digit will be 6th from the right in the rearrangement?

(a) 8 (b) 6 (c) 4 (d) 2

Sol. (*a*) Let us see


Original number 5 3 2 6 1 4 8 9
New arrangement 1 4 ⑧ 9 5 3 2 6
From right
6th

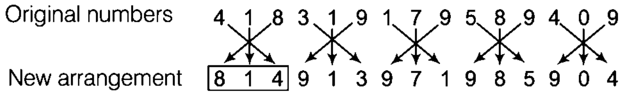
So, it is clear that 6th digit from the right after rearrangement is 8.

***Ex* 23** If in the following numbers, first and last digits are interchanged, then which one of the given options will be the least number?

418 319 179 589 409

(a) 179 (b) 589 (c) 319 (d) 418 (e) 409

Sol. (*d*) Let us see


Original numbers 4 1 8 3 1 9 1 7 9 5 8 9 4 0 9
New arrangement 8 1 4 9 1 3 9 7 1 9 8 5 9 0 4

∴ Least number = 814 ⇒ 418

Practice Corner **3.5**

Build your Confidence...

1. The position of how many digits in the number 53269718 will remain unchanged, if the digits within the number are rearranged in ascending order?

(a) None (b) One (c) Two (d) Three

2. The position of how many digits in the number 59164823 will remain unchanged after the digits are rearranged in descending order within the number? **[Bank (PO) 2010]**

(a) None (b) One (c) Two (d) Three
(e) More than three

3. How many such digits are there in the number 62591483 each of which is as far away from the beginning of the number as when the digits are arranged in ascending order within the number?

(a) None (b) One
(c) Two (d) Three

4. How many such pairs of digits are there in the number 5234816 each of which has as many digits between them in the number as when the digits are arranged in descending order within the number?

(a) None (b) One
(c) Two (d) More than three

5. How many such pair of digits are there in the number 536142 each of which has as many digits between them in the number as when the digits are arranged in the ascending order within the number?

(a) None (b) One (c) Two (d) Three

6. The position of how many digits in the number 8247531 will remain unchanged after the digits are rearranged in ascending order within the number? **[K-MAT 2011]**

(a) None (b) One (c) Two (d) Three
(e) More than three

7. If the digits in the number 86435192 are arranged in ascending order, what will be the difference between the digits which are second from the right and fourth from the left in the new arrangement? **[PNB (Clerk) 2009]**

(a) One (b) Two (c) Three (d) Four
(e) None of these

8. If each of the digits in the number 92581473 are arranged in ascending order, what will be the sum of the digits which are fourth from the right and third from the left in the new arrangement? **[PNB (Clerk) 2011]**

(a) 8 (b) 7 (c) 6 (d) 11
(e) None of these

9. The positions of the first and fifth digits in the number 83146759 are interchanged. Similarly, the second and the sixth digits are interchanged and so on. Which of the following will be the third digit from the right end after the rearrangement?

(a) 3 (b) 1 (c) 6 (d) 7

10. In the number 3856490271, positions of the first and second digits are interchanged, positions of the third and fourth digits are interchanged and so on till the positions of 9th and 10th digits are interchanged, then which digit will be fifth from the left end?

(a) 6 (b) 4 (c) 9 (d) 0

11. The positions of the first and the fifth digits of the number 81943275 are interchanged. Similarly, the positions of the second and the sixth digits are interchanged and so on till the fourth and the eighth digits. Which of the following will be the third digit from the right end after the rearrangement? **[IBPS (PO) 2012]**

(a) 1 (b) 9 (c) 2 (d) 4
(e) None of these

12. In the number 76534218, each digit is replaced by the next digit, *i. e.*, '1' is replaced by '2', '2' is replaced by '3' and so on and then the digits are arranged in ascending order from left to right, which digit will be 5th from the left end?

(a) 6 (b) 5 (c) 7 (d) 4

13. Each odd digit in the number 5263187 is substituted by the next higher digit and each even digit is substituted by the previous lower digit and the digits, so obtained are rearranged in ascending order, which of the following will be the third digit from the left end after the rearrangement?

(a) 2 (b) 4 (c) 5 (d) 6

14. If it is possible to form only one three digit number which is a perfect square of a two digit number from the second, the sixth and the seventh digits of the number 76483912 using each digit only once. The second digit of that number is your answer. If no such number can be formed, your answer is '0' and if more than one such number can be formed, your answer is '5'. **[UCO Bank (Clerk) 2009]**

(a) 5 (b) 0 (c) 1 (d) 6
(e) 9

15. If it is possible to form a three digit number which is a perfect square of a two digit odd number with the third, the fifth and the eighth digits of the number 532784691. Which of the following will be the second digit of that two digit odd number? If more than one such number can be formed, give (a) as the answer and if no such number can be formed, give (c) as the answer.

(a) 1 (b) 7 (c) 9 (d) @

16. If it is possible to make a three digit number, which is a perfect square of a two digit number from the second, the fourth and the eighth digits of 31792056, using each digit only once, what is the two digit number? If the perfect square cannot be formed, your answer is 'N' and if more than one such number can be formed, your answer is 'X'.

(a) 14 (b) 16 (c) 12 (d) X

17. If the first and last digits of the following numbers are interchanged, then find the sum of the largest and the smallest numbers.

435 851 311 128 980

(a) 1000 (b) 945 (c) 815 (d) 910

18. If the following numbers are arranged in ascending order, then what will be the square of the digits sum of the second number from the left end of the new arrangement?

315 117 472 301 137

(a) 324 (b) 196 (c) 169 (d) 121

Directions (Q. Nos. 19-21) Following questions are based on the five three-digit numbers given below.

528 739 846 492 375 **[BOI (PO) 2010]**

19. Which of the following represents the sum of the first two digits of the highest number?

(a) 7 (b) 10 (c) 12 (d) 13
(e) None of these

20. If the positions of the first and the second digits of each number are interchanged, which of the following will be third digit of the second lowest number?

(a) 8 (b) 9 (c) 6 (d) 2
(e) 5

21. If the positions of the first and the third digits of each number are interchanged, which of the following will be the middle digit of the third highest number?

(a) 2 (b) 3 (c) 4 (d) 9
(e) 7

Directions (Q. Nos. 22-23) Following questions are based on the five three-digit numbers given below.

118 516 935 453 620

22. How many numbers have more than one prime digits?

(a) None (b) One (c) Two (d) Three

23. What will be the 25% of the second largest number?

(a) 155 (b) 145 (c) 90 (d) 135

Directions (Q. Nos. 24-28) Following questions are based on the five three-digit numbers given below.

813 261 458 732 694 **[Uttaranchal GBC 2012]**

24. If the positions of the first and the third digits are interchanged in each of these numbers, then which of these will be an odd number?

(a) 261 (b) 694 (c) 813 (d) 732

25. If all the three digits are rearranged in ascending order (from left to right) within the number, in each of these numbers, then which of these will be the second highest?

(a) 458 (b) 813 (c) 732 (d) 694

26. What is the difference between the sum of the three digits of the highest and that of the second highest number?

(a) 5 (b) 8 (c) 12 (d) 0

27. If the positions of the second and the third digits are interchanged in each of these numbers, then which of these will be exactly divisible by 5?

(a) 694 (b) 458 (c) 261 (d) 732

28. If the first and the second digits are interchanged in each of these numbers, then which of the following will be the second smallest number?

(a) 732 (b) 261 (c) 458 (d) 813

Directions (Q.Nos. 29-35) These questions are based on the following six numbers. **[SBI (Clerk) 2009]**

382 473 568 728 847 629

29. If the second and the third digits of each number are interchanged, which number will be the third lowest?

(a) 629 (b) 382 (c) 473 (d) 568
(e) None of these

30. If the first and the third digits of each number are interchanged, which number will be the third highest?

(a) 473 (b) 728 (c) 847 (d) 629
(e) None of these

31. If the first and the second digits of each number are interchanged, which number will be the second highest?

(a) 568 (b) 473 (c) 847 (d) 382
(e) None of these

32. If 382 is written as 238, 473 as 347 and so on, then which of the following two numbers will have least difference between them?

(a) 473 and 382 (b) 629 and 728
(c) 629 and 568 (d) 728 and 847
(e) 629 and 847

33. If the first and the third digits of each number are interchanged and one is added to the second digit of each number, then which of the following pairs of numbers will have highest total of their numerical value?

(a) 847 and 629 (b) 568 and 728
(c) 728 and 847 (d) 568 and 847
(e) 629 and 473

34. If the first digit of each number replaces the third digit of that number, third digit replaces the second digit and the second digit replaces the first digit and then the number thus formed are arranged in the descending order, then which number will be the third?

(a) 568 (b) 382 (c) 473 (d) 847
(e) None of these

35. If one is added to the second digit of each number and one is subtracted from the third digit of each number and then if the first and third digits of each number are interchanged, then which number will be lowest?

(a) 473 (b) 568 (c) 382 (d) 847
(e) None of these

Response & Interpretations

1. (*b*) Let us see

The given number 5 3 2 6 9 $\boxed{7}$ 1 8
Ascending order arrangement 1 2 3 5 6 $\boxed{7}$ 8 9

So, position of only one digit remains unchanged.

2. (*c*) Let us see

The given number 5 9 1 6 $\boxed{4}$ 8 $\boxed{2}$ 3
Descending order arrangement 9 8 6 5 $\boxed{4}$ 3 $\boxed{2}$ 1

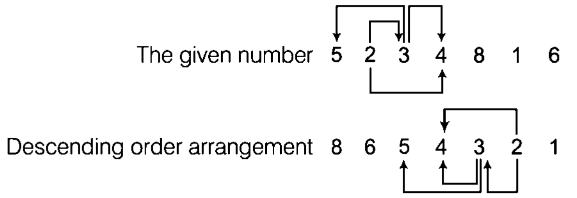
So, position of two digits remain unchanged.

3. (*c*) Let us see

The given number 6 $\boxed{2}$ 5 9 1 4 $\boxed{8}$ 3
Ascending order arrangement 1 $\boxed{2}$ 3 4 5 6 $\boxed{8}$ 9

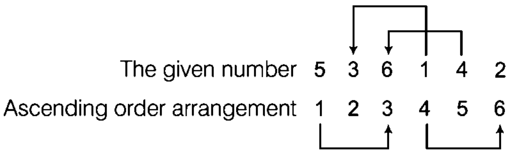
Hence, two digits remain at the same place from the beginning.

4. (*d*) Let us see


The given number 5 2 3 4 8 1 6
Descending order arrangement 8 6 5 4 3 2 1

∴ Required pairs = (53), (23), (34) and (24)

5. (*c*) Let us see


The given number 5 3 6 1 4 2
Ascending order arrangement 1 2 3 4 5 6

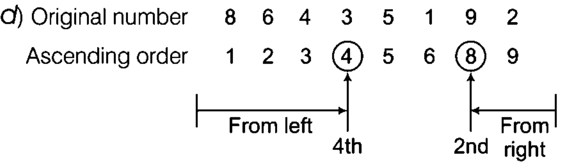
So, there are two required pair of digits.

6. (*c*) Let us see

The given number 8 $\boxed{2}$ 4 7 $\boxed{5}$ 3 1
Ascending order arrangement 1 $\boxed{2}$ 3 4 $\boxed{5}$ 7 8

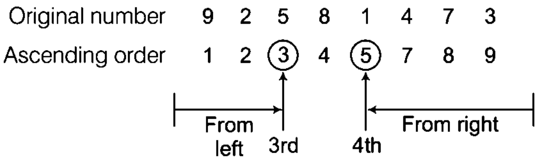
So, position of two digits remain unchanged.

7. (*d*)


Original number 8 6 4 3 5 1 9 2
Ascending order 1 2 3 4 5 6 8 9
From left
4th
2nd
From right

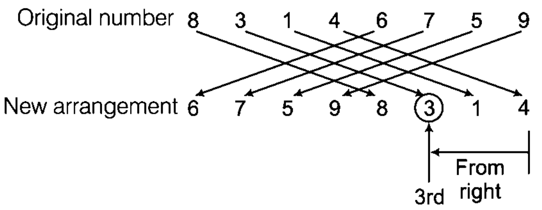
∴ Required difference = 8 – 4 = 4

8. (*a*) Let us see


Original number 9 2 5 8 1 4 7 3
Ascending order 1 2 3 4 5 7 8 9
From left
3rd
4th
From right

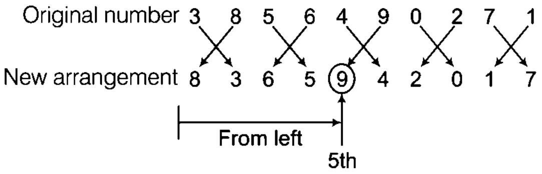
∴ Required sum = 5 + 3 = 8

9. (*a*) Let us see


Original number 8 3 1 4 6 7 5 9
New arrangement 6 7 5 9 8 3 1 4
From right
3rd

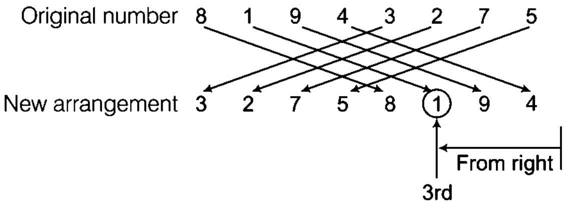
So, the required digit is 3.

10. (*c*) Let us see


Original number 3 8 5 6 4 9 0 2 7 1
New arrangement 8 3 6 5 9 4 2 0 1 7
From left
5th

So, the required digit is 9.

11. (*a*) Let us see


Original number 8 1 9 4 3 2 7 5
New arrangement 3 2 7 5 8 1 9 4
From right
3rd

So, the required digit is 1.

12. (*a*) Let us see

Original number	7	6	5	3	4	2	1	8
Step I Arrangement	8	7	6	4	5	3	2	9
Step II Arrangement	2	3	4	5	6	7	8	9

From left → 5th

Hence, the required digit is 6.

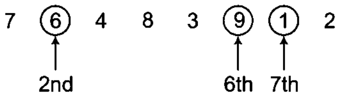
13. (*b*) Let us see

Original number	5	2	6	3	1	8	7
	+1↓	−1↓	−1↓	+1↓	+1↓	−1↓	+1↓
Step I Arrangement	6	1	5	4	2	7	8
Step II Arrangement	1	2	4	5	6	7	8

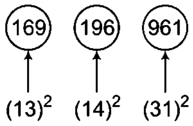
From left → 3rd

So, the required digit is 4.

14. (*a*) Let us see


7 6 4 8 3 9 1 2
2nd
6th
7th

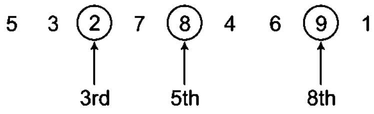
Perfect square numbers to be formed are as follows


169
196
961
$(13)^2$
$(14)^2$
$(31)^2$

∴ Number of perfect square numbers = 3

So, the required answer is 5.

15. (*b*) Let us see


5 3 2 7 8 4 6 9 1
3rd
5th
8th

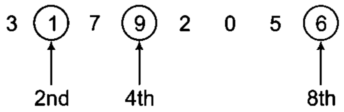
The three-digit numbers to be formed with 2, 8 and 9 are

289, 298, 829, 892, 928, 982
↑
$(17)^2$

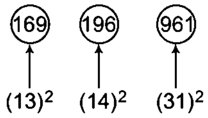
∴ Required two digit odd number = 17

∴ 2nd digit of 1⑦ = 7

16. (*d*) Let us see


3 1 7 9 2 0 5 6
2nd
4th
8th

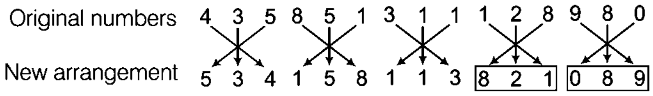
Perfect squares to be formed with 1, 9, and 6 are as follows


169
196
961
$(13)^2$
$(14)^2$
$(31)^2$

∴ Number of perfect square numbers = 3

So, the required answer is X.

17. (*d*) According to the question,


Original numbers 4 3 5 8 5 1 3 1 1 1 2 8 9 8 0
New arrangement 5 3 4 1 5 8 1 1 3 8 2 1 0 8 9

Now, largest number = 821

and smallest number = 089

∴ Required sum = 821 + 089 = 910

18. (*d*) According to the question,

Given numbers	315	117	472	301	137
Ascending order	117	137	301	315	472

From left ↑
2nd

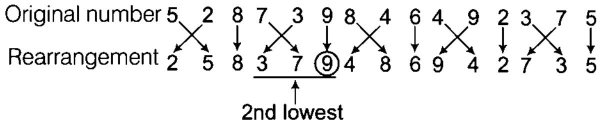
Digits sum of the 2nd number from left = 1 + 3 + 7 = 11

∴ Square of the digits sum = $(11)^2$ = 121

19. (*c*) Highest number = 846

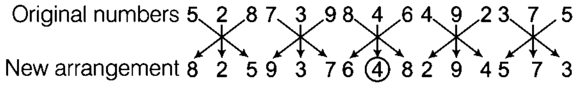
∴ Sum of the first two digits of 846 = 8 + 4 = ⑫

20. (*b*) According to the question,


Original number 5 2 8 7 3 9 8 4 6 4 9 2 3 7 5
Rearrangement 2 5 8 3 7 9 4 8 6 9 4 2 7 3 5
2nd lowest

∴ Third digit of 37⑨ = 9

21. (*c*) According to the question,


Original numbers 5 2 8 7 3 9 8 4 6 4 9 2 3 7 5
New arrangement 8 2 5 9 3 7 6 4 8 2 9 4 5 7 3

After new arrangement, third highest number is 648.

∴ Middle digit of 648 = 4

22. (*c*) 118 : No prime digit
516 : One prime digit *i.e.,* 5
935 : Two prime digits *i.e.,* 3 and 5
453 : Two prime digits *i.e.,* 3 and 5
620 : One prime digit *i.e.,* 2
So, required numbers are 935 and 453.

23. (*a*) 2nd largest number = 620

$$\therefore \quad 25\% \text{ of } 620 = \frac{25}{100} \times 620$$
$$= \frac{1}{4} \times 620 = 155$$

24. (*d*) According to the question,

Original numbers 8 1 3 2 6 1 4 5 8 $\boxed{7\ 3\ 2}$ 6 9 4
New arrangement 3 1 8 1 6 2 8 5 4 $\boxed{2\ 3\ 7}$ 4 9 6

Here, only number 237 is odd.
∴ Required number = 732

25. (*a*) According to the question,

Original number 813 261 $\boxed{458}$ 732 694
New arrangement 138 126 $\boxed{458}$ 237 469
2nd highest

∴ Required number = 458

26. (*d*) Highest number = 813
Second highest number = 732
∴ Required difference = (8 + 1 + 3) − (7 + 3 + 2)
= 12 − 12 = 0

27. (*b*) According to the question,

Original numbers 8 1 3 2 6 1 $\boxed{4\ 5\ 8}$ 7 3 2 6 9 4
New arrangement 8 3 1 2 1 6 $\boxed{4\ 8\ 5}$ 7 2 3 6 4 9
Divisible by 5

∴ Required number = 458

28. (*a*) According to the question,

Original number 8 1 3 2 6 1 4 5 8 $\boxed{7\ 3\ 2}$ 6 9 4
New arrangement 1 8 3 6 2 1 5 4 8 $\boxed{3\ 7\ 2}$ 9 6 4
2nd smallest

∴ Required number = 732

29. (*d*) According to the question,

Original numbers 3 8 2 4 7 3 $\boxed{5\ 6\ 8}$
New arrangement 3 2 8 4 3 7 $\boxed{5\ 8\ 6}$
↑
Third lowest

Original numbers 7 2 8 8 4 7 6 2 9
New arrangement 7 8 2 8 7 4 6 9 2

∴ Required number = 568

30. (*b*) According to the question,

3 8 2 4 7 3 5 6 8 $\boxed{7\ 2\ 8}$ 8 4 7 6 2 9
2 8 3 3 7 4 8 6 5 $\boxed{8\ 2\ 7}$ 7 4 8 9 2 6
↑
Third highest

∴ Required number = 728

31. (*b*) According to the question,

Original numbers 3 8 2 $\boxed{4\ 7\ 3}$ 5 6 8 7 2 8
New arrangement 8 3 2 $\boxed{7\ 4\ 3}$ 6 5 8 2 7 8
2nd highest

Original numbers 8 4 7 6 2 9
New arrangement 4 8 7 2 6 9

∴ Required number = 473

32. (*d*) According to the question,

Original number	382	473	568	728	847	629
New arrangement	238	347	856	872	784	962

(a) 473 − 382 ⇒ 347 − 238 = 109
(b) 629 − 728 ⇒ 962 − 872 = 90
(c) 629 − 568 ⇒ 962 − 856 = 106
(d) 728 − 847 ⇒ $\boxed{872 - 784 = 88}$ Least difference
(e) 629 − 847 ⇒ 962 − 784 = 178
So, the required numbers are 728 and 847.

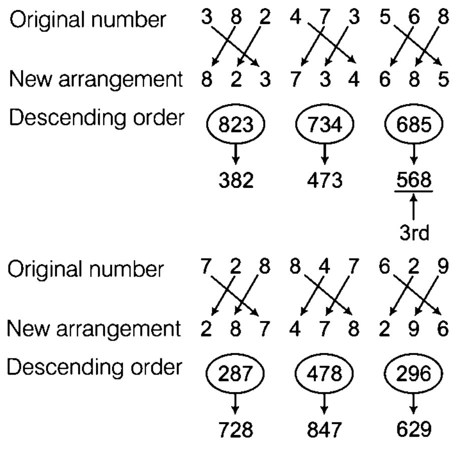
33. (*b*) According to the question,

Original numbers 3 8 2 4 7 3 5 6 8 7 2 8
+1 +1 +1 +1
New arrangement 2 9 3 3 8 4 8 7 5 8 3 7

Original numbers 8 4 7 6 2 9
+1 +1
New arrangement 7 5 8 9 3 6

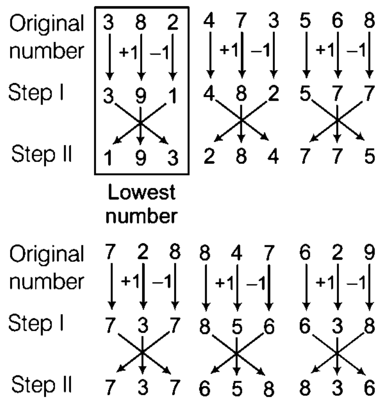
(a) 847 + 629 ⇒ 758 + 936 = 1694
(b) 568 + 728 ⇒ $\boxed{875 + 837 = 1712}$ ← Highest total
(c) 728 + 847 ⇒ 837 + 758 = 1595
(d) 568 + 847 ⇒ 875 + 758 = 1633
(e) 629 + 473 ⇒ 936 + 384 = 1320
So, required pair of numbers are 568 and 728.

34. (*a*) According to the question,


Original number 3 8 2 4 7 3 5 6 8
New arrangement 8 2 3 7 3 4 6 8 5
Descending order 823 734 685
382 473 568
3rd
Original number 7 2 8 8 4 7 6 2 9
New arrangement 2 8 7 4 7 8 2 9 6
Descending order 287 478 296
728 847 629

∴ Required number = 568

35. (*c*) According to the question,


Original number 3 8 2 4 7 3 5 6 8
+1 −1
Step I 3 9 1 4 8 2 5 7 7
Step II 1 9 3 2 8 4 7 7 5
Lowest number
Original number 7 2 8 8 4 7 6 2 9
+1 −1
Step I 7 3 7 8 5 6 6 3 8
Step II 7 3 7 6 5 8 8 3 6

∴ Required number = 382

Type 6 Letter and Number Sequence Test

Letter and number sequence test is based on a sequence of letters and numbers in which a series of letters and/or numbers with or without repetitions are given. The students are required to find the total number of a particular number or letter in the series applying certain condition. Apart from that, the questions may be based on some series pattern, analogy, classification etc.

Sometimes, the given sequence also includes symbols along with numbers and letters. Such sequence is called 'Alpha-numeric sequence'. *Let us see all types of sequence given below*

(i) Number sequence, 4 9 6 9 4 4 6 2 2 1 5 0 3 0 3
(ii) A letter sequence B A B C D L L C L B A M A N
(iii) Alpha-numeric sequence, ϕ 4 3 θ A × * ↑ 1 J > + 5

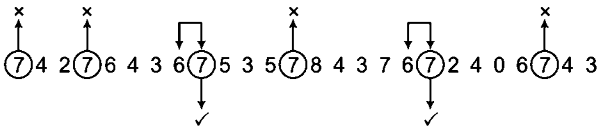
Formats of the questions will give a better idea about such test

***Ex* 24** How many 7's immediately preceded by 6 but not immediately followed by 4 are there in the following series?

7 4 2 7 6 4 3 6 7 5 3 5 7 8 4 3 7 6 7 2 4 0 6 7 4 3

(a) One (b) Two (c) Four (d) Six

Sol. (*b*) Let us see


7 4 2 7 6 4 3 6 7 5 3 5 7 8 4 3 7 6 7 2 4 0 6 7 4 3
×
×
×
×
✓
✓

✓ = Condition fulfilled × = Condition not fulfilled.

Clearly, there are two such 7's.

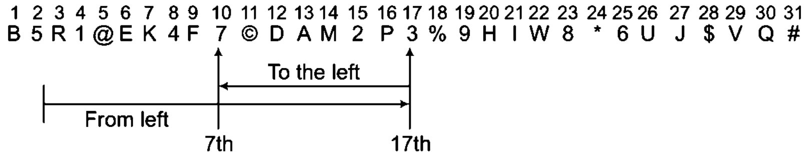
Directions (Example Nos. 25-28) Study the following sequence carefully and answer the questions that follow.

B 5 R 1 @ E K 4 F 7 © D A M 2 P 3 % 9 H I W 8 * 6 U I $ V Q #

***Ex* 25** Which of the following is the 7th to the left of the 17th from the left end of the above arrangement?

(a) 7 (b) W (c) * (d) 4

Sol. (*a*) Let us see


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
B 5 R 1 @ E K 4 F 7 © D A M 2 P 3 % 9 H I W 8 * 6 U J $ V Q #
To the left
From left
7th
17th

➘ 7th to the left of 17th from the left end = (17 − 7) = 10th from left end = 7

Ex **26** Which of the following is exactly in the middle between D and U in the given arrangement?

(a) % (b) H (c) 9 (d) 3

Sol. (*c*) Let us see

D = 12th from the left

U = 26th from the left

∴ Middle letter between D and U = $\frac{12+26}{2}$ = 19th from left = 9

Ex **27** Four of the following, three are alike in a certain way based on their position in the given arrangement and so form a group. Which is the one that does not belong to that group?

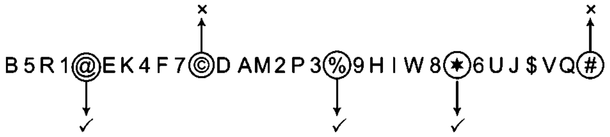
(a) P M 3 (b) K F E (c) 6 J * (d) 7 D 4

Sol. (*d*) As in all others the first and the third elements are consecutive ones in the given arrangement.

Ex **28** How many such symbols are there in the given arrangement each of which is immediately preceded by a number but not immediately followed by a consonant?

(a) None (b) One (c) Two (d) Three

Sol. (*d*) Let us see


×
×
B 5 R 1 @ E K 4 F 7 © D A M 2 P 3 % 9 H I W 8 ✶ 6 U J $ V Q #
✓
✓
✓

✓ = Condition fulfilled × = Condition not fulfilled

Clearly, there are three such symbols.

Practice Corner **3.6**

Build your Confidence...

1. Which number has come maximum time in the following number series?

5 4 3 3 5 4 8 8 3 2 5 3 6 5 5

(a) 5 (b) 4 (c) 3 (d) 2

2. Which number comes least in the given series?

8 4 6 7 3 4 3 7 8 3 4 4 5 6 3 4 6 4 3 4 8 **[SSC (CGL) 2008]**

(a) 8 (b) 7 (c) 5 (d) 4

3. How many 4's are there in the series which comes between two 5's? **[CBI (PO) 2011]**

3 4 4 5 4 5 4 2 1 4 5 4 5 7 4 5 4 5

(a) 4 (b) 5 (c) 6 (d) 3
(e) None of these

4. How many 7's are there in the given series which are immediately preceded by 6 but not immediately followed by 8? **[SSC (CPO) 2008]**

3 4 8 7 6 1 5 6 7 8 4 9 6 7 5

(a) 1 (b) 2 (c) 3 (d) 4

5. Which digit comes in the middle of the given series?

2 4 3 5 4 4 5 6 7 8 8 9 5 6 7 1 7

(a) 5 (b) 7 (c) 6 (d) 9

6. In the given number series, how many 4's are there which are immediately preceded by a prime number but not immediately followed by a prime number? **[RBI Grade 'B' 2011]**

41 41 54 26 41 83 49 24 83 48 28 45 48 74 64 54

(a) 6 (b) 4 (c) 3 (d) 5
(e) None of these

7. How many letters are immediately followed by L in the given letter series? **[UP B.Ed. 2011]**

C P M L M M B L T L D E S L

(a) 4 (b) 5 (c) 3 (d) 6

8. How many times n comes before p in the given series? **[RRB (ALP) 2010]**

m s t n p z x n p n p q y n p r a n p s t

(a) 2 (b) 3 (c) 4 (d) 5

9. In the following series, how many Ks are there which are immediately preceded by N and immediately followed by U? **[SSC (CGL) 2011]**

A B C D K N L J M N K S T R Z N K U A N K U B W X N K L S

(a) 6 (b) 2
(c) 3 (d) 4

Directions (Q. Nos. 10-15) Study the following arrangement carefully and answer the questions given below. **[Andhra Bank (PO) 2010]**

F 4 © T 2 E % M P 5 W 9 @ L Q R 6 U H 3 Z 7 ★ A T B 8 V # G $ Y D

10. What should come in place of question mark (?) in the following series based on the above arrangement?

TEM 59L RU3 ?

(a) 7AB (b) 7AT (c) *78 (d) ABV
(e) None of these

11. How many such consonants are there in the above arrangement, each of which is immediately preceded by a number but not immediately followed by a number?

(a) None (b) One (c) Two (d) Three
(e) None of these

12. Which of the following is the 10th to the right of the 19th from the right end of the above arrangement?

(a) M (b) T (c) # (d) 2
(e) None of these

13. How many such symbols are there in the above arrangement, each of which is immediately preceded by a number and immediately followed by a letter?

(a) None (b) One (c) Two (d) Three
(e) More then three

14. Four of the following five are alike in a certain way based on their positions in the above arrangement and so form a group. Which is the one that does not belong to that group?

(a) M24 (b) PWM (c) Q6L (d) RUQ
(e) VG8

15. If all the symbols are dropped from the above arrangement, which of the following will be the fourteenth from the left end?

(a) R (b) Q (c) U (d) 3
(e) None of these

16. In the given number series, how many 9s are there which are immediately followed by 1 but not immediately preceded by 8?

18 91 35 79 13 91 57 98 69 14 20 86 49 12

(a) 3 (b) 6
(c) 4 (d) None of these

17. How many N's are there in the following series which are immediately preceded by M and also immediately followed by M?

M M N M N M E N M N F P N M N M N M N M

(a) 3 (b) 5
(c) 2 (d) None of these above

Directions (Q. Nos. 18-22) Study the following arrangement carefully and answer the questions **[IBPS (Clerk) 2013]**

C E B A C D B C D A C E B E D C A B A D A C E D U B A U B D B U

18. How many such pairs of alphabets are there in the series of alphabets given in BOLD (D to C) in the given arrangement each of which has as many letters between them (in both forward and backward directions) as they have between them in the English alphabetical series?

(a) Three (b) One (c) Two
(d) None (e) More than three

19. Which of the following is the ninth to the right of the twenty-second from the right end of the given arrangement?

(a) D (b) E (c) B
(d) C (e) U

20. If all the alphabets of the series are written in reverse order, then which of the following will be 8th to the right of the 7th from the left end of the series?

(a) A (b) B (c) C
(d) D (e) None of these

21. How many such A's are there in the given arrangement each of which is immediately preceded by a 'B' and also immediately followed by a consonant?

(a) One (b) None
(c) More than three (d) Two
(e) Three

22. How many such D's are there in the given arrangement each of which is immediately preceded by a consonant and also immediately followed by a vowel?

(a) More than four (b) Four
(c) Two (d) Three
(e) One

23. In the following series of numbers, find out how many times 1, 3 and 7 have appeared together, 7 being in the middle and 1 and 3 on either side of 7? **[CMAT 2013]**

2 9 3 1 7 3 7 7 7 1 3 3 1 73 8 5 7 1 3 7 7 1 7 3 9 0 6

(a) 3 (b) 4
(c) 5 (d) None of these

24. How many even numbers are there in the following sequence of numbers each of which is immediately followed by an odd number as well as immediately preceded by an even number? **[CMAT 2013]**

8 6 7 6 8 9 3 2 7 5 3 4 2 2 3 5 5 2 2 8 1 1 9

(a) One (b) Three
(c) Five (d) None of these

25. How many such 6's are there in the following number series, each of which is immediately preceded by 1 or 5 and immediately following by 3 or 9?

2 6 3 7 5 6 4 2 9 6 1 3 4 1 6 3 9 1 5 6 9 2 3 1 6 5 4 3 2 1 9 6 7 1 6 3

(a) Nine (b) One
(c) Two (d) Three

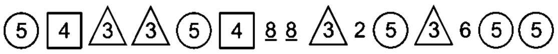
26. In the following series, how many such odd numbers are there which are divisible by 3 or 5, then followed by odd numbers and then also followed by even numbers?

12, 19, 21, 3, 25, 18, 35, 20, 22, 21, 45, 46, 47, 48, 9, 50, 52, 54, 55, 56

(a) Three (b) One
(c) Two (d) None of these

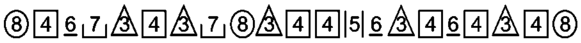
Response & Interpretations

1. (*a*)


5 4 3 3 5 4 8 8 3 2 5 3 6 5 5

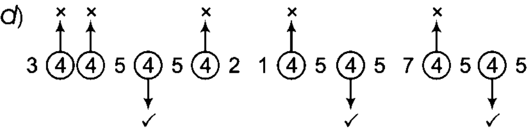
8 = 2 times, 6 = 1time
5 = 5 times, 4 = 2 times
3 = 4 times, 2 = 1 time
Clearly, 5 has come maximum times.

2. (*c*)


8 4 6 7 3 4 3 7 8 3 4 4 5 6 3 4 6 4 3 4 8

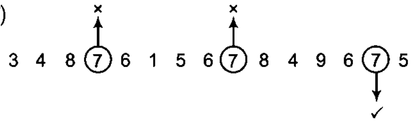
8 = 3 times, 7 = 2 times, 6 = 3 times, 5 = 1 time
4 = 7 times, 3 = 5 times
Clearly, 5 is minimum.

3. (*d*)


× × × × ×
3 4 4 5 4 5 4 2 1 4 5 4 5 7 4 5 4 5
✓ ✓ ✓

✓ = Condition fulfilled
× = Condition not fulfilled
∴ Required 4 = 3 times

4. (*a*)


× ×
3 4 8 7 6 1 5 6 7 8 4 9 6 7 5
✓

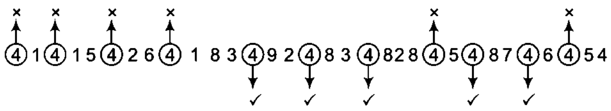
✓ = Condition fulfilled
× = Condition not fulfilled
∴ Required 7 = 1 time

5. (*b*) Total number of digits = 17

∴ Middle digit $= \frac{17+1}{2} = \frac{18}{2} =$ 9th digit

∴ 9th digit in the given series = 7

6. (*d*)


× × × × × ×
4 1 4 1 5 4 2 6 4 1 8 3 4 9 2 4 8 3 4 8 2 8 4 5 4 8 7 4 6 4 5 4
✓ ✓ ✓ ✓ ✓

✓ = Condition fulfilled
× = Condition not fulfilled
∴ Required 4 = 5 times

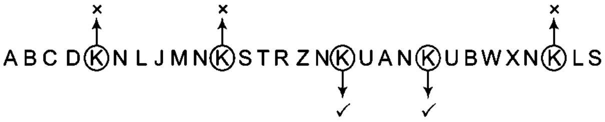
7. (*a*) C P Ⓜ L M M Ⓑ L Ⓣ L D E Ⓢ L

Clearly, M, B, T and S are immediately followed by L.

8. (*d*) m s tⓝp z xⓝpⓝp q yⓝp r aⓝp s t

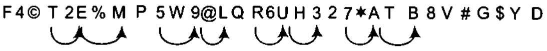
Clearly, required number of n = 5 times

9. (*b*)


× × ×
A B C D K N L J M N K S T R Z N K U A N K U B W X N K L S
✓ ✓

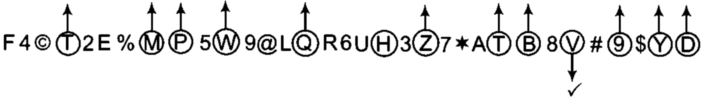
✓ = Condition fulfilled
× = Condition not fulfilled
∴ Required number of K = 2 times

10. (*a*)


F 4 © T 2 E % M P 5 W 9 @ L Q R 6 U H 3 2 7 ✶ A T B 8 V # G $ Y D

So, following the sequence will be 7 AB.

11. (*b*)


× × × × × × × × × × ×
F 4 © T 2 E % M P 5 W 9 @ L Q R 6 U H 3 Z 7 ✶ A T B 8 V # 9 $ Y D
✓

✓ = Condition fulfilled, × = Condition not fulfilled
Clearly, V is the required consonant.

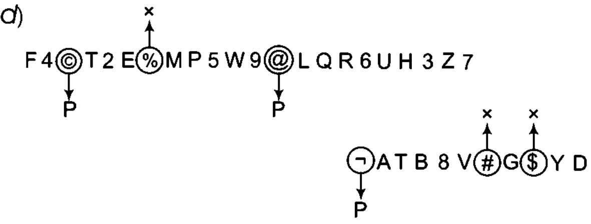
12. (*b*)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
F	4	Ⓒ	T	2	E	%	M	P	5	W	9	@	L	Q	R	6	U	H	3	Z	7	✶	A	T	B

27	28	29	30	31	32	33
8	V	#	G	$	Y	D

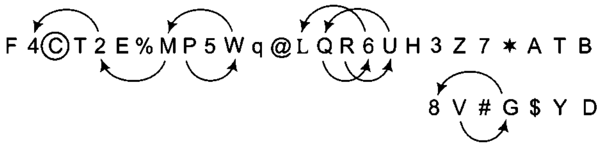
Total terms = 33
∴ 19th term from right = (33 + 1 – 19) = 34 – 19
= 15th from left = Q
∴ 10th term to the right of 19th term
= 10th term to the right of Q
= (15 + 10)th = 25th term from left = T

13. (*d*)


×
F 4 © T 2 E % M P 5 W 9 @ L Q R 6 U H 3 Z 7
P P
× ×
¬ A T B 8 V # G $ Y D
P

✓ = Condition fulfilled
× = Condition not fulfilled
∴ Required number = 3 times

14. (*a*) The pattern is as follows



Hence, option (a) does not follow the pattern.

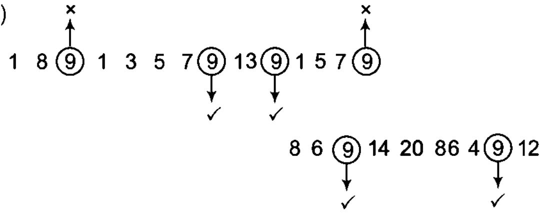
15. (*e*) New arrangement

1	2	3	4	5	6	7	8	9	10	11	12	13	14
F	4	J	2	E	M	P	5	W	9	I	Q	R	⑥

15	16	17	18	19	20	21	22	23	24	25	26	27
U	H	3	Z	7	A	T	B	8	V	G	Y	D

Clearly, 14th term from left = 6.

16. (*c*)

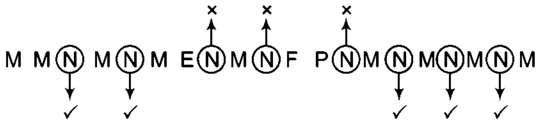


✓ = Condition fulfilled

× = Condition not fulfilled

∴ Required number of 9 = 4 times

17. (*b*)

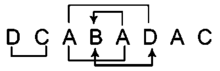


✓ = Condition fulfilled

× = Condition not fulfilled

∴ Required number of N = 5

18. (*e*) Series of alphabets given in BOLD



19. (*a*) Ninth to the right of the twenty second from the right end = (22 − 9) *i.e.,* 13th from the right end = D

20. (*b*) The given series of alphabets in reverse order

U B D B U A B U D E C A D A B A C D E B E C A D C B D C A B E C

Now, 8th to the right of the 7th from the left end = (8 + 7) th *i.e.,* 15th from the left end = Ⓑ

21. (*d*) C E $\boxed{\overset{\downarrow}{\text{B}}\text{ A C}}$ D B C D A C E B E D C A $\boxed{\overset{\downarrow}{\text{B}}\text{ A D}}$ A C E D U B A U B D B U

Thus, there are two such A's

22. (*e*) C E B A C D B $\boxed{\text{C }\overset{\downarrow}{\text{D}}\text{ A}}$ C E B E D C A B A D A C E D U B A U B D B U

Thus, there is only one such D.

23. (*a*) Clearly, the given number series is as follows

2 9 3 $\boxed{1\ 7\ 3}$ 7 7 7 1 3 3 $\boxed{1\ 7\ 3}$ 8 5 7 1 3 7 7 $\boxed{1\ 7\ 3}$ 9 0 6

∴ Required pattern = $\dfrac{1/3}{\text{Preceding}}\ \dfrac{7}{\text{Middle}}\ \dfrac{1/3}{\text{Following}}$

Therefore, total number of such patterns = 3

24. (*d*) Clearly, the given sequence of numbers is as follows

8 $\boxed{6}$ 7 6 $\boxed{8}$ 9 3 2 7 5 3 4 2 $\boxed{2}$ 3 5 5 2 2 $\boxed{8}$ 1 1 9

Required pattern

$= \dfrac{\text{Even number}}{\text{Preceded}}\ \dfrac{\text{Even number}}{\text{Middle}}\ \dfrac{\text{Odd number}}{\text{Followed}}$

So, total number of such even numbers = Four

25. (*d*) Clearly, the given number series is as follows

2 6 3 7 5 6 4 2 96 1 3 4 $\boxed{1\ \boxed{6}\ 3}$ 9 1 $\boxed{5\ \boxed{6}\ 9}$ 2 3 1 6 5 4 3 2 1 9 6 7 1 $\boxed{6}$ 3

Required pattern = $\dfrac{1 \text{ or } 5}{\text{Preceded}}\ 6\ \dfrac{3 \text{ or } 9}{\text{Followed}}$

Therefore, total number of such 6's = Three

26. (*c*) Clearly, the given number series is as follows

12, 19, 21, $\boxed{3}$, 25, 18, 35, 20, 22, $\boxed{21}$, 45, 46, 47, 48, 9, 50, 52, 54, 55, 56

Required pattern

$= \dfrac{\text{Odd number divisible}}{\text{by 3 or 5}}\ \dfrac{\text{Odd number}}{\text{Followed}}\ \dfrac{\text{Even number}}{\text{Followed}}$

So, total number of such odd numbers = Two

Master Exercise

Take a Leap...

1. If it is possible to make a meaningful word with the 2nd, the 6th, the 9th and the 12th letters of the word 'CONTRIBUTION', which of the following will be the last letter of that word? If more than one such word can be formed, give 'M' as the answer and if no such word is there, give 'X' as the answer. **[CBI (PO) 2010]**

(a) T (b) O (c) N (d) M

2. If the following scrambled letters are rearranged to form the name of city, which letter will appear in the middle?

AIDMURA

(a) M (b) R (c) U (d) D

3. If the 2nd half of the letters of the word 'TRANSPORTATIONAL' are reversed and placed before 1st half of the letters, which letter will be the third to the right of the 13th letter from the right?

(a) R (b) N (c) L (d) A

Directions (Q. Nos. 4-6) In the following questions, from the given alternatives words, select the word which cannot be formed using the letters of the given word. **[SSC (Steno) 2013]**

4. Reasonable

(a) Bones (b) Brain (c) Arson (d) Noble

5. Attraction

(a) Caution (b) Traction (c) Ration (d) Carton

6. Workshop

(a) Show (b) Crow (c) Work (d) Pork

Directions (Q. Nos. 7-10) In each of the following question a word is given followed by four other words, one of which cannot be formed by using the letters of given word. Find that particular word.

7. EDUCATIONAL **[SSC (DEO) 2012]**

(a) NATIONAL (b) NEAT (c) DEAN (d) LION

8. PERMANENT **[SSC (Multitasking) 2012]**

(a) REMNANT (b) TRAMP (c) MENTOR (d) AMPERE

9. MORTGAGE **[SSC FCI 2012]**

(a) AROMA (b) GEAR (c) ROAM (d) GRATE

10. SPECIFICATION **[SSC (CGL) 2013]**

(a) PACIFIC (b) FACTION (c) FAINTING (d) TONIC

11. In the following question a word is given followed by four different words, one of which can be formed by using the letter of the given word find the word.

'IMMEDIATELY' **[LIC (ADO) 2012]**

(a) DIALECT (b) LIMITED (c) DIAMETER (d) DICTATE
(e) None of these

12. In the following letter series, how many BCN occur in such a way, that C is in the middle and B and N are on any one side? **[SSC (10+2) 2013]**

B C M X N C X N B X N C B N C B Y B C X N B C N A B O N M Z C B

(a) 4 (b) 2 (c) 5 (d) 3

13. Study the number series given below and answer the question that follows.

7 8 9 7 6 5 3 4 2 8 9 7 2 4 5 9 2 9 7 6 4 7

How many 7's are preceded by 9 and followed by 6? **[CMAT 2013]**

(a) 2 (b) 3 (c) 4 (d) 5

14. How many M's occur in the following series such that it is preceded by W and followed by V? **[SSC (10+2) 2013]**

X U V M R S T M W N V M W O P M W U V M W A C W M V H P N V W M W T U N

(a) 3 (b) 2 (c) 1 (d) 5

Directions (Q. Nos. 15-19) Answer these questions referring to the symbol letter number sequence given below. **[CMAT 2013]**

2 P J @ 8 $ L B 1 V # Q 6 δ G W 9 K C D 3 © • £ 5 F R 7 A γ 4

15. How many symbols and numbers are there in the sequence which are either immediately preceded or immediately followed by the letter which is from the first half of the English alphabet?

(a) 6 (b) 7 (c) 8 (d) 9

16. Four of the following five are similar in relation to their positions in the above sequence and hence from a group. Which one does not belong to that group?

(a) QK5 (b) L6D (c) PLδ (d) 1G©

17. Each symbol exchanges its position with its immediate right symbol/letter/number. Now, how many letters are there in the sequence which are immediately followed by a number and immediately preceded by a symbol?

(a) One (b) Two
(c) Three (d) None of these

18. P@L is to γ75 in the same way as $ B # is to

(a) R£© (b) 5£0
(c) F•3 (d) None of these

19. Which of the following indicates the total number of symbols, letters and numbers respectively, which get eliminated from the sequence when every second element of the sequence, from your left is dropped from the sequence?

(a) 5, 8, 2 (b) 6, 9, 1 (c) 5, 8, 1 (d) 6, 8, 1

20. How many such letters are there in the word 'CREATIVE' which have as many letters between them in the word as in the alphabets?

(a) 1 (b) 2 (c) 3 (d) 4

21. If it is possible to make a meaningful word with the 1st, 4th, 7th and 11th letters of the word 'INTERPRETATION', which of the following will be the third letter of that word? If more than one such word can be made, give 'M' as the answer and if no such word can be formed, give 'X' as the answer.

(a) T (b) I (c) R (d) M

22. If the 1st half of the alphabets is written in the reverse order, which letter will be exactly middle between the 9th letter from the left and the 10th letter from the right end?

(a) B (b) A
(c) D (d) None of these

23. If the word 'FLOURISH', all the vowels are first arranged alphabetically and then all the consonants are arranged alphabetically and then all the vowels are replaced by the previous letter and all the consonants are replaced by the next letter from English alphabets. Which letter will be third from the right end?
[UCO Bank (Clerk) 2007]

(a) I (b) S
(c) M (d) V
(e) None of these

Directions (Q. Nos. 24-26) Following questions are based on the five three-digit numbers given below. **[Corporation Bank (PO) 2010]**

528 739 846 492 375

24. Which of the following represents the sum of the first two digits of the highest number?

(a) 7 (b) 10 (c) 12 (d) 1
(e) None of these

25. If the positions of the 1st and the 2nd digits number are interchanged, which of the following is 3rd digit of the 2nd lowest number?

(a) 8 (b) 9 (c) 6 (d) 2
(e) 5

26. If the positions of the 1st and the 3rd digit number are interchanged, which of the following is the middle digit of the 3rd highest number?

(a) 2 (b) 3 (c) 4 (d) 9
(e) 7

27. How many meaningful English words can be formed with the letters LBAE, using each letter only once in each word? **[Andhra Bank (PO) 2010]**

(a) None (b) One (c) Two (d) Three
(e) More than three

28. How many such pairs of letters are there in the word JUMPING each of which has as many letters, between them in the word as in the English alphabet?

(a) None (b) One (c) Two (d) Three

Directions (Q. Nos. 29-33) Study the following arrangement of combinations of English letters numerals and symbols carefully and answer the questions given below it.

8 C M @ N £ T 2 Y 6 S £ Q $ 7 ★ W # Z 3 U E % A 4

29. If each symbol is first converted into a numeral and then all the numerals are converted into English letters, how many such converted English letters will be there in the above arrangement of element?

(a) 25 (b) 7 (c) 12 (d) 13

30. How many symbols are there in the above series each of which is immediately preceded and also immediately followed by a vowel?

(a) One (b) Two
(c) Three (d) None of these

31. What should come in place of the question mark (?) in the following series based on the above arrangement?

CMA N£E 2Y3 (?) $7★

(a) S£6 (b) S£Z
(c) S£# (d) None of these

32. If all the vowels are dropped from the above series, which of the following would be the 8th element to the right of the 13th element from the left end?

(a) 4 (b) % (c) 8 (d) C

33. Three of the following four are alike in a certain way with respect to their positions in the above arrangement. Which is one that is different from the other four?

(a) E3# (b) Q7W (c) £62 (d) TMN

34. If the last four letters of the word 'TABULATION' are written in reverse order followed by next two in reverse order and next three in the reverse order, counting from the end, which letter would be eighth in the new arrangement?

(a) N (b) T
(c) E (d) None of these

35. How many such pairs of letters are there in the word 'KINDNESS' each of which have as many letters between them in word as in the alphabets?

(a) Nil (b) One (c) Two (d) Three

Directions (Q. Nos. 36-40) In the following word 'ELECTROCARDIOGRAPH', the first half of the letters are reversed, but one letter 'P', then prefixed and finally letter 'S' is suffixed.

36. Which letters will be exactly in the middle?

(a) L and E (b) R and D (c) D and I (d) E and R

37. How many vowels will be to the left of the middle letter?

(a) 2 (b) 1 (c) 4 (d) 3

38. Which of the two vowels will be adjoining each other?

(a) IE (b) IO (c) AE (d) AO

39. Which vowel will have a consonant to the left but a vowel to the right of it?

(a) I (b) O (c) A (d) E

40. Name the letter sandwiched between two vowels?

(a) R and T (b) C and L
(c) R and L (d) None of these

41. How many 9's in the following sequence of the numbers are immediately preceded by 8 but not immediately followed by 4?

9 8 6 2 7 9 6 2 8 9 4 8 8 9 4 9 8 4 8 8 9 4 9 8 4 9

(a) 1 (b) 2
(c) 3 (d) None of these

Directions (Q. Nos. 42-44) Following questions are based on the five three-digit numbers given below. **[BOI (PO) 2010]**

813 479 564 385 792

42. If the positions of the 1st and the 2nd digits within each number are interchanged, which of the following will be the lowest number?

(a) 813 (b) 479 (c) 564 (d) 385
(e) 792

43. Which of the following is the 2nd digit of the 2nd lowest number?

(a) 1 (b) 7 (c) 6 (d) 8
(e) 9

44. Which of the following is the sum of the 1st and the 3rd digits of the 2nd highest number?

(a) 11 (b) 13 (c) 9 (d) 8
(e) None of these

45. If the following scrambled letters are rearranged to form the name of a city, the city, so formed is famous for its 'WILGARO'.

(a) Locks (b) Steel Plant
(c) Temples (d) Pottery

46. How many such pairs of letters are there in the word 'HOCKEY' each of which have as many letters between them in word as in the alphabets?

(a) Nil (b) One
(c) Two (d) Three

Directions (Q. Nos. 47-49) Following questions are based on the five three-digit numbers given below. **[OBC (PO) 2008]**

519 378 436 624 893

47. If the positions of the 1st and the 3rd digits within each number are interchanged, which of the following will be the 2nd smallest number?

(a) 519 (b) 378
(c) 436 (d) 624
(e) 893

48. If '1' is subtracted from the 1st digit in each number and '1' is added to the 2nd digit in each number, which will be the 3rd digit of the 2nd highest number?

(a) 9 (b) 8 (c) 6 (d) 4
(e) 3

49. If the position of the 1st and the 2nd digits within each number are interchanged, which of the following will be the highest number?

(a) 519 (b) 378
(c) 436 (d) 624
(e) 893

Directions (Q. Nos. 50-55) Study the following arrangement carefully and answer the question given below. **[Indian Bank (PO) 2011]**

F 4 © J 2 E % M P 5 W 9 @ I Q R 6 U H 3 Z 7 ★ A T B 8 V # G $ Y D

50. How many such consonants are there in the above arrangement, each of which is immediately preceded by a number but not immediately followed by a number?

(a) None (b) One
(c) Two (d) Three
(e) More than three

51. Which of the following is the 10th to the right of the 19th from the right end of the above arrangement?

(a) M (b) T
(c) # (d) 2
(e) None of these

52. If all the symbols are dropped from the above arrangement, which of the following will be the 14th from the left end?

(a) R (b) Q
(c) U (d) 3
(e) None of these

53. What should come in place of the question mark(?) in the following series based on the above arrangement?

JEM 591 RU3 ?

(a) 7AB (b) 7AT
(c) ★78 (d) ABV
(e) None of these

54. How many such symbols are there in the above arrangement, each of which is immediately preceded by number and immediately followed by a letter?

(a) None (b) One (c) Two (d) Three
(e) More than three

55. Four of the following five are alike in a certain way based on their positions in the above arrangement and so form a group. Which is the one that does not belong to that group?

(a) © 2 4 (b) P W M (c) R I 6 (d) R U Q
(e) V G 8

56. From the word 'LAPAROSCOPY', how many independent meaningful English words can be made without changing the order of the letters and using each letter only once?

(a) 1 (b) 2 (c) 3 (d) 4

57. If in the word 'DISTURBANCE', the first letter is interchanged with the last letter, the second letter is interchanged with the tenth letter and so on, which letter would come after the letter 'T' in the newly formed word?

(a) I (b) U (c) N (d) S

58. Number of letters skipped in between adjacent letters in the series is in the order of $1^2+1, 2^2+2, 3^2+3$. Which of the following series observes the rule given above?

(a) BDIV (b) BCJV (c) BDJU (d) BDJV

Response & Interpretations

1. (*b*) From letters O, I, N, T, only one meaningful word 'INTO' can be formed and last letter of this word is O.

2. (*c*) The city name is 'MAD Ⓤ RAI' and letter U exists exactly in
↑
the middle.

3. (*d*) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
L A N O I T A T T R A N S P O R
13th letter from right = (16 + 1 – 13) = 4 th letter from left
= O
∴ Required letter = 3rd to the right of O
= 4 + 3 = 7th from left = A

4. (*b*) By using the letters of the given word 'Reasonable', 'Brain', is the only word which cannot be formed due to the absence of letter 'I'.

5. (*a*) By using the letters of the given word 'Attraction', 'Caution', is the only word which cannot be formed due to the absence of letter 'U'.

6. (*b*) By using the letters of the given word, 'Workshop', 'Crow', is the only word which cannot be formed due to the absence of letter 'C'.

7. (*a*) 'NATIONAL' is the only word which cannot be formed due to repetition of letter 'N'.

8. (*c*) Only 'MENTOR' is the word which cannot be formed due to absence of letter 'O'.

9. (*a*) The word 'AROMA' cannot be formed using the given letters because only one 'A' is present in the given word.

10. (*c*) The word which cannot be formed from 'SPECIFICATION' is FAINTING', because 'G' is present in given word.

11. (*b*) 'LIMITED' is the only word which can be formed by using the letters of given word.

12. (*d*) B C M X N C X N B X (N C B)(N C B) Y B C X N (B C N) A B O N M Z C B
So, 3 'BCN' occur in such a way, that C is in the middle and B and N are on any one side.

13. (*a*) 7 8 $\boxed{976}$ 5 3 4 2 8 9 7 2 4 5 92 $\boxed{976}$ 47
Clearly, there are two 7's following the rule.

14. (*c*) X U V M R S T M W N V M W O P M W U V M W A C (W M V) H P N V W M W T U N
Clearly, there is one M which is preceded by W and followed by V.

15. (*c*) Clearly, in the given arrangement, there are eight such symbols and numbers *i.e.*, @, $, 1, δ, 9, 3, 7 and γ.

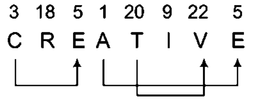
16. (*c*) Clearly, the pattern is as follows
Q K 5; L 6 D; 1 G ©
+6 +7 +6 +7 +6 +7
But P L δ
+5 +7

17. (*b*) Clearly, the new alpha-numeric arrangement according to the question is
2 P J 8 @ L $ B 1 V Q # 6 G δ W 9 K C D 3 • £ 5 © F R 7 A 4 γ
So, in the given arrangement, there are two such letters *i.e.*, B and W.

18. (*d*) Clearly, the pattern is as follows
P @ L; r 7 5; $ B #; F £ 3
+2 +3 –2 –3 +2 +3 –2 –3

19. (*d*) Clearly, the new alpha-numeric arrangement of eliminated element
P @ $ B V Q δ W K D © £ F 7 γ
So, number of symbols = 6
Number of letters = 8
Number of numbers = 1

20. (*c*) There are three pairs C E, A E and TV in the word which have as many letters between them in the words as in the alphabetical order.



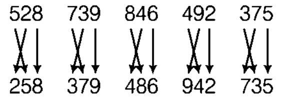
21. (*d*) Two meaningful words RITE and TIRE can be formed.

22. (*b*) M L K J I H G F Ⓔ D C B A N O P Ⓠ R S T U V W X Y Z
——→ 9th 10th ←——
The 9th letter from the left is E and 10th letter from the right is Q and therefore we see that A lies exactly in middle between E and Q.

23. (*c*) According to the question,
F L O U R I S H
↓
I O U F L R S H
I O U F L R S H
–1↓ –1↓ –1↓ –1↓ –1↓ –1↓ –1↓ –1↓
H N T G I M S T

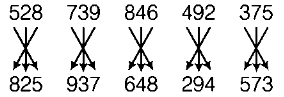
24. (*c*) 528 739 846 492 375
Here, the highest number = $\boxed{84}$ 6
∴ Required sum = 8 + 4 = 12

25. (*b*)



Now, 2nd lowest number = 379
3rd digit of 37⑨ = 9

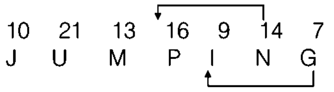
26. (*c*)



3rd highest number = 648
Its middle digit = 4

27. (*c*) Required words = ABLE, BALE.

28. (*c*)



∴ Letter pairs = NP, GI ⇒ Two

29. (*d*) Required number of letters
= (8, @ £ 2, 6, £ $, 7, ✸, #, 3, %, 4) = 13

30. (*a*) There is only one such symbol (E%A).

31. (*c*) The series is

C M A, N £ E, 2 Y 3, S £ #, ...

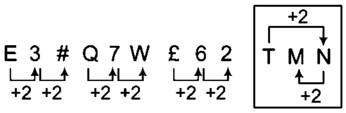
8 C M @ N £ T 2 Y 6 S £ Q $ 7 ★ W # 7 ③ U E Y A 4

32. (*b*) 8 C M @ N £ T 2 Y 6 S £ Q $ 7 ✸ W # Z 3 % 4

13th from left

Required symbol is %.

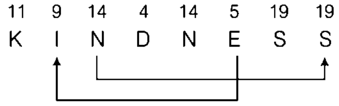
33. (*d*)


E 3 # Q 7 W £ 6 2
+2 +2 +2 +2 +2 +2
+2
T M N
+2

Except (d), in other groups, there is a gap of one letter/symbol between two.

34. (*d*) The new word formed will be 'NOITALUBA', then eighth letter from the end would be O.

35. (*c*)


11 9 14 4 14 5 19 19
K I N D N E S S

∴ Letter pairs = EI, NS ⇒ Two

36. (*d*) Following the instructions as given in the question, the new arrangement of letters would be 'PACORTCEL ER DIOGRAPHS' and therefore letters E and R exists exactly in the middle.

37. (*d*) There are three vowels A, O, E to the left of middle letter E.

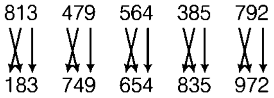
38. (*b*) P A C O R T C E L E R D I O G R A P H S

39. (*a*) Vowel I has a consonant D to the left but a vowel to the right of it. P A C O R T C E Ⓛ E R D I O G R A P H S

40. (*b*) Letters C and L are sandwiched between two vowels A (C) O and E (L) E.

41. (*d*) None

42. (*a*)


813 479 564 385 792
183 749 654 835 972

Now, the lowest number = 183. Its original is 813.

43. (*b*) 2nd lowest number = 4 ⑦ 9

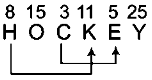
Its 2nd digit = 7

44. (*c*) 2nd highest number = ⑦ 9 ②

∴ Required sum = 7 + 2 = 9

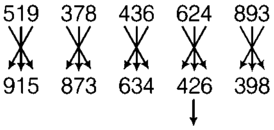
45. (*c*) The city is 'GWALIOR' and it is famous for temples.

46. (*b*)


8 15 3 11 5 25
H O C K E Y

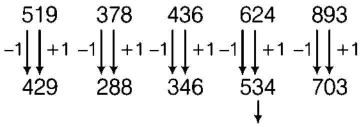
∴ Letter pairs = CE, HK

47. (*d*)


519 378 436 624 893
915 873 634 426 398

2nd highest number

48. (*d*)

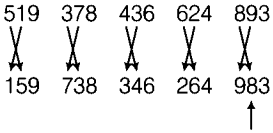

519 378 436 624 893
−1 +1 −1 +1 −1 +1 −1 +1 −1 +1
429 288 346 534 703

2nd highest number

∴ 2nd highest number = 5 3 4

and 3rd digit of 2nd highest number is 4

49. (*e*)


519 378 436 624 893
159 738 346 264 983

Highest number

50. (*b*) There is only one such consonant 8 V #.

51. (*b*) 10th to the right of 19th from the right end

= (19 − 10) th from right end

= 9th from right end = T

52. (*e*) New sequence after dropping symbols

F 4 J 2 E M P 5 W 9 I Q R 6 U H 3 Z 7 A T B 8 V G Y D

14th from left = 6

53. (*a*) $J \xrightarrow{+6} 5 \xrightarrow{+6} R \xrightarrow{+6} 7$

$E \xrightarrow{+6} 9 \xrightarrow{+6} U \xrightarrow{+6} A$

$M \xrightarrow{+6} I \xrightarrow{+6} 3 \xrightarrow{+6} B$

54. (*d*) There are three such symbols.

4 © J, 9 @ I, 7 ✸ A

55. (*c*) $© \xrightarrow{+2} 2 \xrightarrow{-3} 4$

$P \xrightarrow{+2} W \xrightarrow{-3} M$

$\boxed{R \xrightarrow{-2} I \xrightarrow{+3} 6}$ ← Odd one

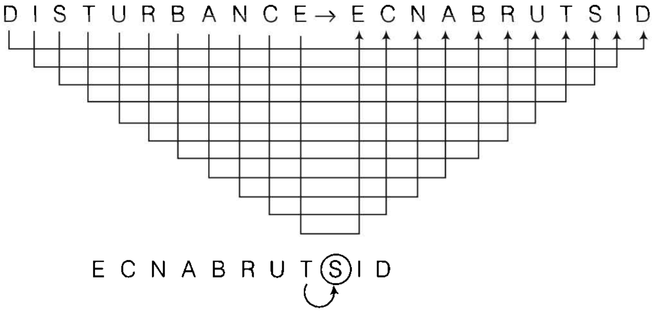
$R \xrightarrow{+2} U \xrightarrow{-3} Q$

$V \xrightarrow{+2} G \xrightarrow{-3} 8$

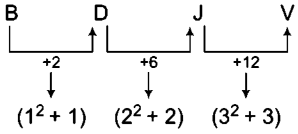
56. (*b*) LAP A R O S COPY

Two meaningful words LAP and COPY can be formed.

57. (*d*)


D I S T U R B A N C E → E C N A B R U T S I D
E C N A B R U T Ⓢ I D

58. (*d*) Let us see


B D J V
+2 +6 +12
(1^2 + 1) (2^2 + 2) (3^2 + 3)

Now, it is clear that only option (d) follows the given rule.

4

Coding-Decoding

Coding-Decoding is process of transmitting an information from one place to other using some suitable codes, so that it might reach to other person safely. Coding-decoding of an information is done with various rules or patterns, so that only the right person can decipher it.

Different types of questions covered in this chapter are as follows

- Coding Based on Rearrangement of Letters
- Coding Based on Replacement of Letters
- Opposite Letters Coding
- Coding of Letters by Their Left and Right Letters
- Number Coding
- Symbol Coding Based on Similarity
- Coding by Substitution/Word Replacement
- Fictitious Language Coding
- Coding by Comparison
- Conditional Coding
- Matrix Coding

This process of coding-decoding basically involves

Coding

When any letter/word/sentence is written or said in such a language which hides the actual meaning of that particular letter/word/sentence from others except the desired person.

Decoding

It helps in tracing out the actual meaning of a coded letter/word/sentence. Generally, coding is done on the basis of the letters of English alphabet and their corresponding positions.

In these questions, a word (basic word) is coded in a particular way and candidates are asked to code other words in the same way. As the matter of fact, there exists no uniform and particular type or category of these questions according to which we could classify questions of coding-decoding. However, keeping in view the candidate's convenience, we have classified different types of questions with illustrations and explanations under different headings.

To solve the questions based on coding-decoding, first of all it is necessary to remember the positions of all alphabetical letters, both in forward and backward order. Several ways for easy remembering of these positions are discussed here.

Forward Order Position (Left to Right)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Forward order positions of letters can be remembered in the following ways

(i) Here is a gap of four letters between each letter of the word group 'EJOTY'.

Letter ⟶	E	J	O	T	Y
	↓	↓	↓	↓	↓
Position order ⟶	5	10	15	20	25

(EJOTY)

- **EJOTY** sounds like a girl name that is JOTI, so it could be remembered by this name.

(ii) Here is a gap of two letters between each letter of the word group 'CFILORUX'.

Letter ⟶	C	F	I	L	O	R	U	X
	↓	↓	↓	↓	↓	↓	↓	↓
Position order ⟶	3	6	9	12	15	18	21	24

(CFILORUX)

- **CFILORUX** sounds like an injection name because the injections which are prescribed by doctors are having strange names.

Backward Order Position (Right to Left)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Students find it difficult to remember backward order positions but, if they keep forward order positions of letters in their mind, they can easily calculate the backward order position of letters in the following way

- Backward order position of any letter = 27 – Forward order position of that letter
  ∴ Backward order position of A = 27 – Forward order position of A = 27 – 1 = 26

Opposite Letters

These are called opposite letters as the forward order corresponding position of an opposite letter is as same as the backward order corresponding position of its opposite letter.

1	2	3	4	5	6	7	8	9	10	11	12	13
↕	↕	↕	↕	↕	↕	↕	↕	↕	↕	↕	↕	↕
A	B	C	D	E	F	G	H	I	J	K	L	M
26	25	24	23	22	21	20	19	18	17	16	15	14
↕	↕	↕	↕	↕	↕	↕	↕	↕	↕	↕	↕	↕
Z	Y	X	W	V	U	T	S	R	Q	P	O	N

A and Z is a pair of opposite letters.

Now, it is clear from the above presentation that two letters are called opposite to each other, if sum of their corresponding positions is equal to 27.

- Opposite position of any letter = 27 – Corresponding position of that letter
  ∴ Opposite position of A = 27 – Corresponding position of A = 27 – 1 = 26 = Z

The pairs of opposite letters can easily be remembered in following ways

(i) A Z (Aaza)
↓ ↓
1 + 26 = 27

(ii) B Y (By)
↓ ↓
2 + 25 = 27

(iii) C X (Six)
↓ ↓
3 + 24 = 27

(iv) D W (Dew)
↓ ↓
4 + 23 = 27

(v) E V (Evening)
↓ ↓
5 + 22 = 27

(vi) F U (Uff)
↓ ↓
6 + 21 = 27

(vii) G T (GT Road)
↓ ↓
7 + 20 = 27

(viii) H S (High School)
↓ ↓
8 + 19 = 27

(ix) I R (Indian Railways)
↓ ↓
9 + 18 = 27

(x) J Q (Jack Queen)
↓ ↓
10 + 17 = 27

(xi) K P (Kevin Peterson)
↓ ↓
11 + 16 = 27

(xii) L O (Love)
↓ ↓
12 + 15 = 27

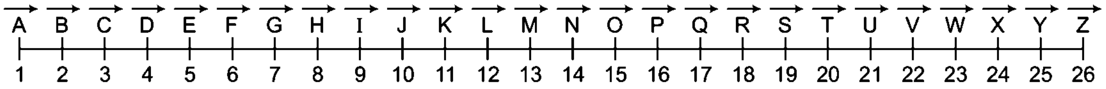
(xiii) M N (MAN)
↓ ↓
13 + 14 = 27

Arrangement of Letters

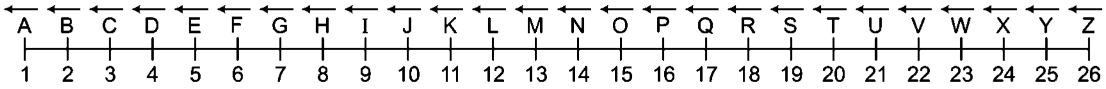
Letters of English alphabet can be arranged either in linear form or in circular form as shown below

1. Linear Arrangement (Straight Line Arrangement)

(i) Left to Right

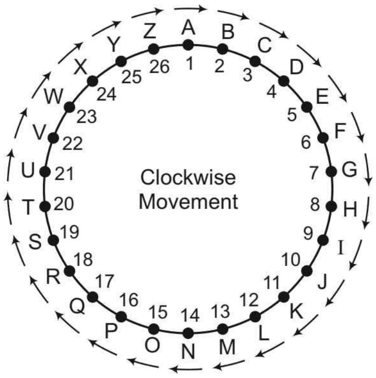

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

(ii) Right to Left

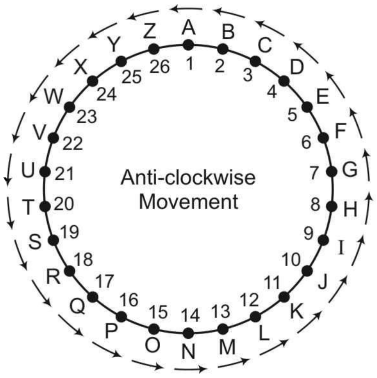

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

2. Circular Arrangement

(i) Clockwise Arrangement

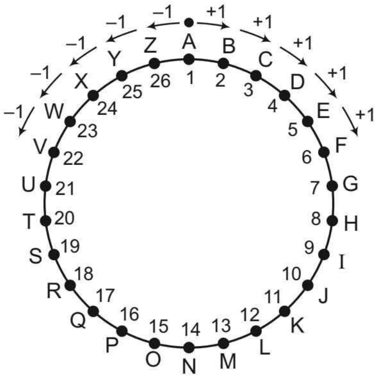

Clockwise Movement
A 1
B 2
C 3
D 4
E 5
F 6
G 7
H 8
I 9
J 10
K 11
L 12
M 13
N 14
O 15
P 16
Q 17
R 18
S 19
T 20
U 21
V 22
W 23
X 24
Y 25
Z 26

(ii) Anti-clockwise Arrangement


Anti-clockwise Movement
A 1
B 2
C 3
D 4
E 5
F 6
G 7
H 8
I 9
J 10
K 11
L 12
M 13
N 14
O 15
P 16
Q 17
R 18
S 19
T 20
U 21
V 22
W 23
X 24
Y 25
Z 26

Understanding of linear and circular arrangement is very important as when, we have to find the letters forward or backward within the limit of 26 letters of English alphabet, we can use linear arrangement but when we have to find the letters before A or after Z, then circular arrangement is very-very useful.

If we have to find the letter one place forward to A, then that letter will be B and this result can be found out by using either linear or circular arrangement but when one is asked to find the letter which is one letter backward of A (Z is one letter backward of A) or one letter forward of Z (A is one letter forward of Z), then only circular arrangement gives such results.



Under this segment of reasoning, following types of questions can be asked

Letter Coding

In this type of questions, the letters of a certain word are arranged in different orders which can be reverse order or fragmented order in which first-half of the word follows some other rule and second part of the word follows some other rule for coding. The candidates are therefore required to understand the different patterns of the letter coding and solve different types of problems based on these patterns which are discussed below.

Type 1 Coding Based on Rearrangement of Letters

In this type of coding, the letters of the original word are rearranged in a particular manner to obtain the code.

Such coding can be of following types

(a) *When all the letters of a word are written in reverse order.*

***Ex* 1** If in a certain code language 'RAMESH' is written as 'HSEMAR', then how will 'CREATE' be written in that language?

(a) TEACRE (b) ETAECR (c) ETAERC (d) ETACRE

Sol. (c) As,

R A M E S H → H S E M A R
1 2 3 4 5 6 → 6 5 4 3 2 1

Similarly,

C R E A T E → $\boxed{\text{E T A E R C}}$
1 2 3 4 5 6 → $\boxed{\text{6 5 4 3 2 1}}$

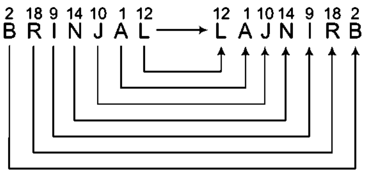
∴ CREATE = ETAERC

***Ex* 2** If in a coded language 'BRINJAL' is written as 'LAJNIRB', then how will 'LADYFINGER' be written in that code?

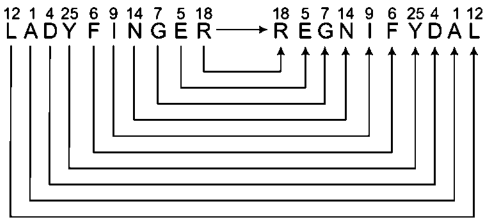
[SSC (Multitasking) 2014]

(a) RNEGIFYDAL (b) RINEGIFYDAL (c) REGNIFYDAL (d) REGNIFYDYAL

Sol. (c) As,



Similarly,



∴ LADYFINGER ⇒ REGNIFYDAL

(b) *When letters of the word are divided into two parts and then both the parts are written in reverse order or the first part is written in reverse order at the place of second part and second part is written in reverse order at place of first part.*

Following situations can arise in such cases

(i) **When the number of letters of the word is even**

Coding of A B C D E F
1 2 3 4 5 6 can be done in certain ways as follows

A B C F E D	1 2 3 6 5 4	D E F A B C	4 5 6 1 2 3
C B A D E F	3 2 1 4 5 6	D E F C B A	4 5 6 3 2 1
C B A F E D	3 2 1 6 5 4	F E D A B C	6 5 4 1 2 3

Ex **3** If in a certain code language 'THREAT' is written as 'RHTTAE', then how will 'PEARLY' be written in that code?

(a) YLRAEP (b) YLRPAE (c) AEPYLR (d) AEPRYL

Sol. (*c*) As, $\begin{array}{c}\text{T H R E A T}\\ 1\ 2\ 3\ 4\ 5\ 6\end{array} \longrightarrow \begin{array}{c}\text{R H T T A E}\\ 3\ 2\ 1\ 6\ 5\ 4\end{array}$ Similarly, $\begin{array}{c}\text{P E A R L Y}\\ 1\ 2\ 3\ 4\ 5\ 6\end{array} \longrightarrow \boxed{\begin{array}{c}\text{A E P Y L R}\\ 3\ 2\ 1\ 6\ 5\ 4\end{array}}$

∴ PEARLY = AEPYLR

(ii) **When the number of letters of the word is odd**

Coding of A B C D E
1 2 3 4 5 can be done in certain ways as follows

A B C E D	1 2 3 5 4
B A C E D	2 1 3 5 4
B A C D E	2 1 3 4 5
D E C A B	4 5 3 1 2
E D C A B	5 4 3 1 2
D E C B A	4 5 3 2 1

Ex **4** If in a certain code language 'GREAT' is written as 'GRETA', then how will 'FIGHT' be written in that code?

(a) FIGTH (b) FGITH (c) FGIHT (d) FITGH

Sol. (*a*) As, $\begin{array}{c}\text{G R E A T}\\ 1\ 2\ 3\ 4\ 5\end{array} \longrightarrow \begin{array}{c}\text{G R E T A}\\ 1\ 2\ 3\ 5\ 4\end{array}$ Similarly, $\begin{array}{c}\text{F I G H T}\\ 1\ 2\ 3\ 4\ 5\end{array} \longrightarrow \boxed{\begin{array}{c}\text{F I G T H}\\ 1\ 2\ 3\ 5\ 4\end{array}}$

∴ FIGHT = FIGTH

(iii) **When letters of the word are divided into two or more groups and then all or some particular groups are written in reverse order**

Coding of A B C D E F
1 2 3 4 5 6 can be done in certain ways as follows

BA	CD	EF	21	34	56
BA	DC	EF	21	43	56
BA	DC	FE	21	43	65

Ex **5** If in a certain code language 'SECTOR' is written as 'ESCTOR', then how will 'MOTHER' be written in that code?

(a) MOHTER (b) OMHTER (c) OMHTRE (d) OMTHER

Sol. (*d*) As, $\begin{array}{c}\text{S E C T O R}\\ 1\ 2\ 3\ 4\ 5\ 6\end{array} \longrightarrow \begin{array}{c}\text{E S C T O R}\\ 2\ 1\ 3\ 4\ 5\ 6\end{array}$ Similarly, $\begin{array}{c}\text{M O T H E R}\\ 1\ 2\ 3\ 4\ 5\ 6\end{array} \longrightarrow \boxed{\begin{array}{c}\text{O M T H E R}\\ 2\ 1\ 3\ 4\ 5\ 6\end{array}}$

∴ MOTHER = OMTHER

(iv) When first and last letter of the word remain at the same place but middle letters get reversed

***Ex* 6** If in a certain code language 'SECTOR' is written as 'SOTCER', then how will 'MOTHER' be written in that code?

(a) MTOHER (b) MEHTOR (c) MEHOTR (d) METOHR

Sol. (*b*) As,

$$\begin{array}{cccccc} S & E & C & T & O & R \\ 1 & 2 & 3 & 4 & 5 & 6 \end{array} \longrightarrow \begin{array}{cccccc} S & O & T & C & E & R \\ 1 & 5 & 4 & 3 & 2 & 6 \end{array}$$

Similarly,

$$\begin{array}{cccccc} M & O & T & H & E & R \\ 1 & 2 & 3 & 4 & 5 & 6 \end{array} \longrightarrow \boxed{\begin{array}{cccccc} M & E & H & T & O & R \\ 1 & 5 & 4 & 3 & 2 & 6 \end{array}}$$

∴ MOTHER = MEHTOR

(v) When each letter of the word is written at a certain place

Coding of A B C D E
1 2 3 4 5 can be done in certain ways as follows

B D A E C	2 4 1 5 3
D B C E A	4 2 3 5 1
C D A E B	3 4 1 5 2
B E C A D	2 5 3 1 4

***Ex* 7** If in a certain code language 'MIGHT' is written as 'GHMTI', then how will 'EARTH' be written in that code?

(a) RTEHA (b) RTEAH (c) RTAEH (d) RETHA

Sol. (*a*) As,

$$\begin{array}{ccccc} M & I & G & H & T \\ 1 & 2 & 3 & 4 & 5 \end{array} \longrightarrow \begin{array}{ccccc} G & H & M & T & I \\ 3 & 4 & 1 & 5 & 2 \end{array}$$

Similarly,

$$\begin{array}{ccccc} E & A & R & T & H \\ 1 & 2 & 3 & 4 & 5 \end{array} \longrightarrow \boxed{\begin{array}{ccccc} R & T & E & H & A \\ 3 & 4 & 1 & 5 & 2 \end{array}}$$

∴ EARTH = RTEHA

Practice Corner 4.1

Build your Confidence...

1. In a certain code language 'MADRAS' is written as 'DAMSAR', how can 'MUMBAI' be written in that code language? **[SSC (10+2) 2012]**

(a) BAIUMM (b) MUMIAB
(c) IABMUM (d) MBIAUM

2. If in a certain code, 'INSTITUTION' is written as 'NOITUTITSNI'. How will 'PERFECTION' be written in that language?

(a) NOICTEFREP (b) NOITCEFERP
(c) NOITCEFRPE (d) NOITCEFREP

3. If in a certain code, 'GIGANTIC' is written as 'GIGTANCI'. How 'MIRACLES' be written in that language?

(a) MIRLCAES (b) MIRLACSE
(c) RIMCALSE (d) RIMLCAES

4. If in a certain code, 'EXPLAINING' is written as 'PXEALNIGNI'. How will 'PRODUCED' be written in that language?

(a) ORPBUDEC (b) ROPUDECD
(c) ORPUDDEC (d) DORPDECU

5. If in a certain code language 'SYSTEM' is written as 'SYSMET', 'NEARER' is written as 'AENRER', then how will 'FRACTION' be written in that language?

(a) CARFNOIT (b) CARFTION
(c) ARFCNOIT (d) FRACNOIT

6. If 'MEAT' is written as 'TEAM', then 'BALE' is written as **[SSC (CGL) 2013]**

(a) ELAB (b) EABL (c) EBLA (d) EALB

7. If in a certain code language 'CHOLINE' is written as 'OCIHLEN', then how will 'SURGEON' be written in that language? **[UCO Bank (PO) 2011]**

(a) RSUEGNO (b) RSEGUNO
(c) RESUGNO (d) RSEUGNO
(e) None of these

8. If 'SWAMINATHAN' is coded as 'NAHTANIMAWS' in a certain code language, then how would you code 'SIRNAME' in that language?

(a) EMAMSIR (b) EMARNIS
(c) EMNARIS (d) EMANRIS

9. In a certain code language 'BREAKDOWN' is written as 'NWODKAERB', then how will 'TRIANGLES' be written in that language? **[IOB (Clerk) 2009]**
(a) SELGNTRIA
(b) AIRTNSELG
(c) SELGNAIRT
(d) AIRTGNSEL
(e) None of these

10. If in a certain code language, 'BROWSER' is written as 'RESWORB', then how 'TEACHER' be coded in that same language?
(a) REHCEAT (b) REHCAET (c) REHCTEA (d) AHRCTEA

11. If in a certain code, 'DAUGHTER' is written as 'TERDAUGH', how will 'APTITUDE' be written in that code? **[SSC (Steno) 2012]**
(a) DEUAPTIT
(b) UDEAPTIT
(c) DUEAPTIT
(d) DAUEPTIT

12. In a certain code, 'KAVERI' is written as 'VAKIRE'. How is 'MYSORE' written in that same code?
(a) EROSYM (b) SYMROE (c) SYMEOR (d) SYMERO

13. In a certain code, 'REFRIGERATOR' is coded as 'ROTAREGIRFER'. Which words from the following would be coded as 'NOITINUMMA'?
(a) ANMOMIUTMI
(b) AMNTOMUIIN
(c) AMMUNITION
(d) NMMUNITIOA

14. If 'VEHEMENT' is written as 'VEHETNEM', then how 'MOURNFUL' be written in that code language? **[RRB (ASM) 2009]**
(a) MOURLUFN
(b) MOUNULER
(c) OURMNFUL
(d) URNFULMO

15. In a certain code language, 'COMPUTRONE' is written as 'PMOCTUENOR'. How is 'ADVANTAGES' written in that same code? **[NMAT 2003]**
(a) ADVANSEGAS
(b) ADVTANSEAG
(c) AVDANTAGES
(d) AVDATNSEGA

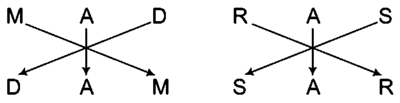
16. In a certain language, 'EXECUTIVE' is coded as 'TCIEUXVEE', then how is 'MAUSOLEUM' coded in that same language? **[MAT 2006]**
(a) LSEUOAUMM
(b) AUUCOSLMM
(c) AUEUOSEMM
(d) SLUEOAUMM

17. If 'CARPET' is coded as 'TCEAPR', then the code for 'NATIONAL' would be
(a) NLATNOIA
(b) LANOITAN
(c) LNAANTOI
(d) LNOINTAA

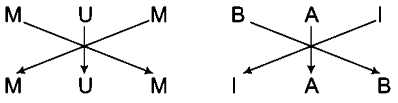
18. If 'NEUROTIC' can be writen as 'TICRONEU' then how can 'PSYCHOTIC' be writtren?
(a) TICOCHPSY
(b) TICCHOPSY
(c) TICCOHPSY
(d) TICHCOPSY

Response & Interpretations (4.1)

1. (*b*) As,

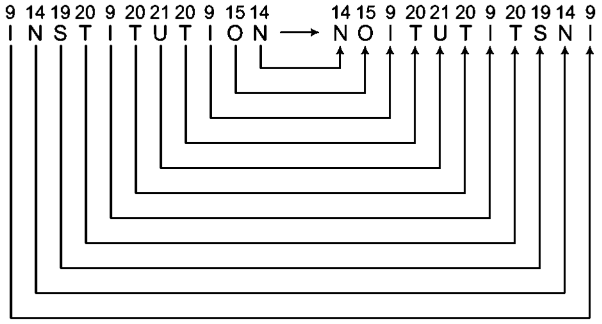


Similarly,

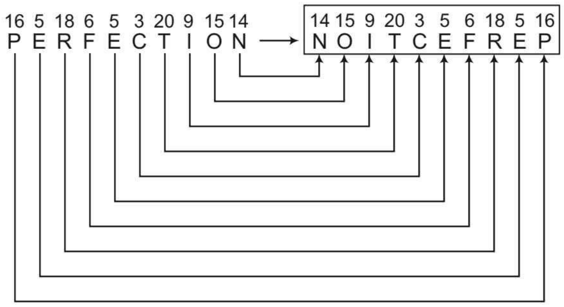


∴ MUMBAI ⇒ MUMIAB

2. (*d*) As,

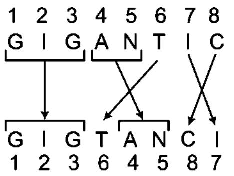


Similarly

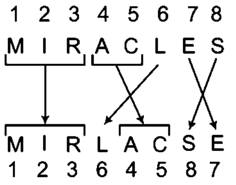


∴ PERFECTION ⇒ NOITCEFREP

3. (*b*) As,


1 2 3 4 5 6 7 8
G I G A N T I C
G I G T A N C I
1 2 3 6 4 5 8 7

Similarly,


1 2 3 4 5 6 7 8
M I R A C L E S
M I R L A C S E
1 2 3 6 4 5 8 7

∴ MIRACLES ⇒ MIRLACSE

4. (*c*) As, E X P L A I N I N G → P X E A L N I G N I
1 2 3 4 5 6 7 8 9 10 → 3 2 1 5 4 7 6 10 9 8

Similarly, P R O D U C E D → O R P U D D E C
1 2 3 4 5 6 7 8 → 3 2 1 5 4 8 7 6

∴ PRODUCED ⇒ ORPUDDEC

Here, the first three and the last letters are reversed as pairs and the rest of the letters are reversed in pair of two letters.

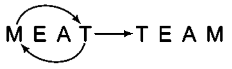
5. (*a*) As, S Y S T E M → S Y S M E T
1 2 3 4 5 6 → 3 2 1 6 5 4

and N E A R E R → A E N R E R
1 2 3 4 5 6 → 3 2 1 6 5 4

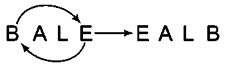
Similarly, F R A C T I O N → C A R F N O I T
1 2 3 4 5 6 7 8 → 4 3 2 1 8 7 6 5

∴ FRACTION ⇒ CARFNOIT

6. (*d*) As,



Similarly,



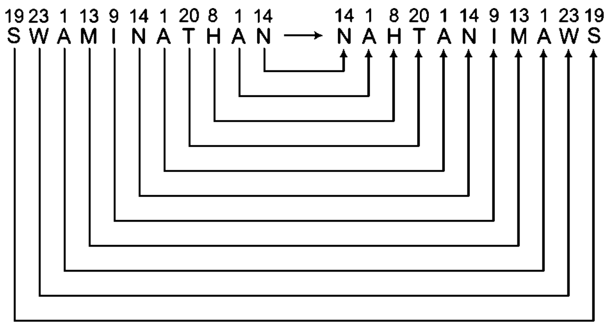
∴ BALE ⇒ EALB

7. (*d*) As, C H O L I N E → O C I H L E N
1 2 3 4 5 6 7 → 3 1 5 2 4 7 6

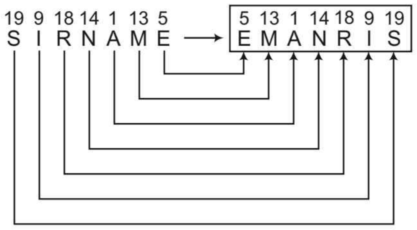
Similarly, S U R G E O N → R S E U G N O
1 2 3 4 5 6 7 → 3 1 5 2 4 7 6

∴ SURGEON ⇒ RSEUGNO

8. (*d*) As,


19 23 1 13 9 14 1 20 8 1 14
S W A M I N A T H A N
14 1 8 20 1 14 9 13 1 23 19
N A H T A N I M A W S

Similarly,


19 9 18 14 1 13 5
S I R N A M E
5 13 1 14 18 9 19
E M A N R I S

∴ SIRNAME ⇒ EMANRIS

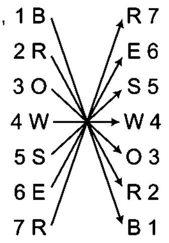
9. (*c*) As, B R E A K D O W N → N W O D K A E R B
1 2 3 4 5 6 7 8 9 → 9 8 7 6 5 4 3 2 1

Similarly, T R I A N G L E S → S E L G N A I R T
1 2 3 4 5 6 7 8 9 → 9 8 7 6 5 4 3 2 1

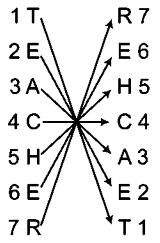
∴ TRIANGLES ⇒ SELGNAIRT

10. (*b*) Here, all letters are coded in reverse order.

As,


1 B
2 R
3 O
4 W
5 S
6 E
7 R
R 7
E 6
S 5
W 4
O 3
R 2
B 1

Similarly,


1 T
2 E
3 A
4 C
5 H
6 E
7 R
R 7
E 6
H 5
C 4
A 3
E 2
T 1

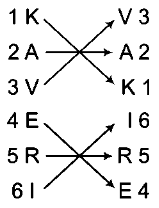
∴ TEACHER ⇒ REHCAET

11. (*b*) As, D A U G H T E R → T E R D A U G H
1 2 3 4 5 6 7 8 → 6 7 8 1 2 3 4 5

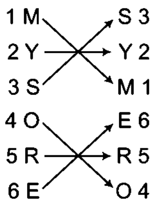
Similarly, A P T I T U D E → U D E A P T I T
1 2 3 4 5 6 7 8 → 6 7 8 1 2 3 4 5

∴ APTITUDE ⇒ UDEAPTIT

12. (*d*) As,

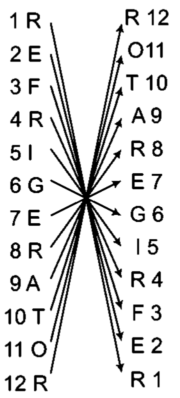

1 K
2 A
3 V
4 E
5 R
6 I
V 3
A 2
K 1
I 6
R 5
E 4

Similarly,

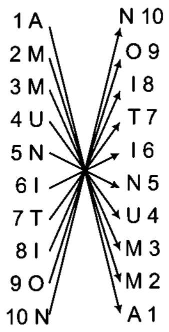

1 M
2 Y
3 S
4 O
5 R
6 E
S 3
Y 2
M 1
E 6
R 5
O 4

∴ MYSORE ⇒ SYMERO

13. (*c*) As,


1 R
2 E
3 F
4 R
5 I
6 G
7 E
8 R
9 A
10 T
11 O
12 R
R 12
O 11
T 10
A 9
R 8
E 7
G 6
I 5
R 4
F 3
E 2
R 1

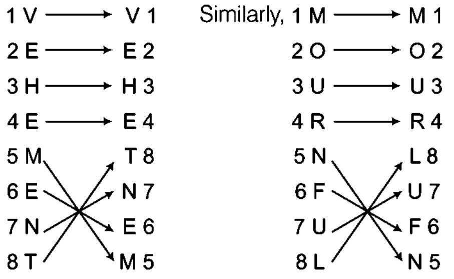
Similarly,


1 A
2 M
3 M
4 U
5 N
6 I
7 T
8 I
9 O
10 N
N 10
O 9
I 8
T 7
I 6
N 5
U 4
M 3
M 2
A 1

∴ NOITINUMMA ⇒ AMMUNITION

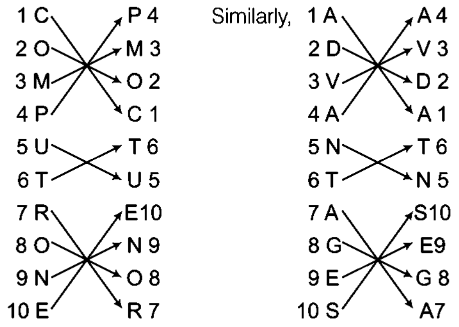
Here, all letters are coded in reverse order.

14. (*a*) As,


1 V → V 1
2 E → E 2
3 H → H 3
4 E → E 4
5 M T 8
6 E N 7
7 N E 6
8 T M 5
Similarly,
1 M → M 1
2 O → O 2
3 U → U 3
4 R → R 4
5 N L 8
6 F U 7
7 U F 6
8 L N 5

∴ MOURNFUL ⇒ MOURLUFN

15. (*d*) As,


1 C P 4
2 O M 3
3 M O 2
4 P C 1
5 U T 6
6 T U 5
7 R E10
8 O N 9
9 N O 8
10 E R 7
Similarly,
1 A A 4
2 D V 3
3 V D 2
4 A A 1
5 N T 6
6 T N 5
7 A S10
8 G E9
9 E G 8
10 S A7

∴ ADVANTAGES ⇒ AVDATNSEGA

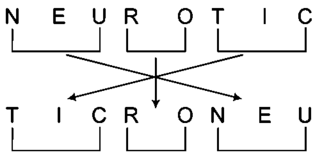
16. (*a*) As, E X E C U T I V E → T C I E U X V E E
1 2 3 4 5 6 7 8 9 → 6 4 7 3 5 2 8 1 9
Similarly, M A U S O L E U M → L S E U O A U M M
1 2 3 4 5 6 7 8 9 → 6 4 7 3 5 2 8 1 9

∴ MAUSOLEUM ⇒ LSEUOAUMM

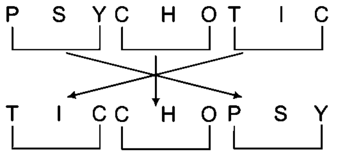
17. (*c*) Letters of the basic word are written in the coded word in such a way that last and first letters, second last and second letters, third last and third letters and so on are written together in the coded word.

∴ NATIONAL ⇒ LNAANTOI

18. (*c*) As,


N E U R O T I C
T I C R O N E U

Similarly


P S Y C H O T I C
T I C C H O P S Y

∴ PSYCHOTIC ⇒ TICCHOPSY

Type 2 Coding Based on Replacement of Letters

In this type of coding, the letters of the words are replaced by other letters following a certain pattern to obtain the code.

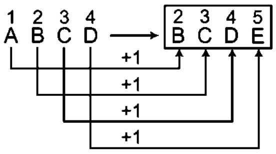
Such coding can be of following types

A. Forward Sequence Coding

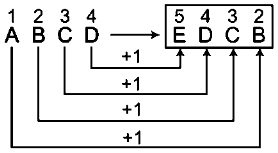
Under this pattern of coding, every letter of a letter group/word is coded in increasing order of English alphabet.

Let us consider the coding of ABCD which can be done in following ways

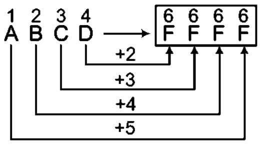
(i)


1 2 3 4
A B C D
2 3 4 5
B C D E
+1
+1
+1
+1

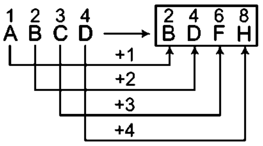
(ii)


1 2 3 4
A B C D
5 4 3 2
E D C B
+1
+1
+1
+1

(iii)


1 2 3 4
A B C D
6 6 6 6
F F F F
+2
+3
+4
+5

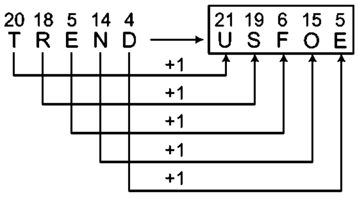
(iv)


1 2 3 4
A B C D
2 4 6 8
B D F H
+1
+2
+3
+4

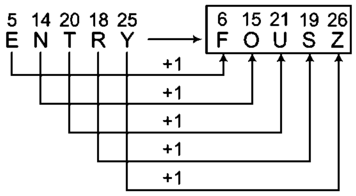
***Ex* 8** If in a certain code language 'TREND' is written as 'USFOE', then how will 'ENTRY' be written in that code?

(a) GNUSZ (b) FOUSZ (c) FUDSZ (d) FOUZS

Sol. (*b*) As,


20 18 5 14 4
T R E N D
21 19 6 15 5
U S F O E
+1
+1
+1
+1
+1

Similarly,


5 14 20 18 25
E N T R Y
6 15 21 19 26
F O U S Z
+1
+1
+1
+1
+1

∴ ENTRY = FOUSZ

Ex **9** If 'PEACE' is coded as 'RGCEG', then how is 'MICKY' coded in the code? **[SNAP 2013]**

(a) MOUSE (b) OKEMA (c) LHBJX (d) JDLJ

Sol. (*b*) As,

Basic word	P	E	A	C	E
	+2 ↓	+2 ↓	+2 ↓	+2 ↓	+2 ↓
Coded word	R	G	C	E	G

Similarly,

Basic word	M	I	C	K	Y
	+2 ↓	+2 ↓	+2 ↓	+2 ↓	+2 ↓
Coded word	O	K	E	M	A

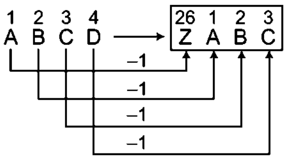
∴ MICKY = OKEMA

B. Backward Sequence Coding

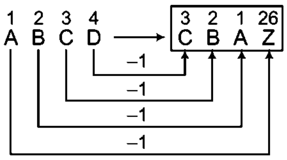
Under this pattern of coding, every letter of a letter group/word is coded in decreasing order of English alphabet.

Let us consider the coding of ABCD which can be done in following ways

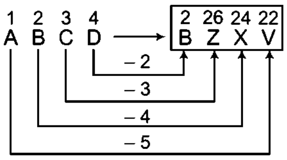
(i)


1 2 3 4
A B C D
26 1 2 3
Z A B C
–1
–1
–1
–1

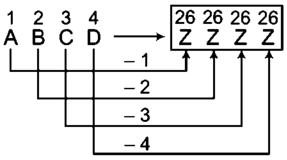
(ii)


1 2 3 4
A B C D
3 2 1 26
C B A Z
–1
–1
–1
–1

(iii)


1 2 3 4
A B C D
2 26 24 22
B Z X V
– 2
– 3
– 4
– 5

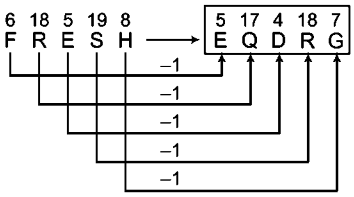
(iv)


1 2 3 4
A B C D
26 26 26 26
Z Z Z Z
– 1
– 2
– 3
– 4

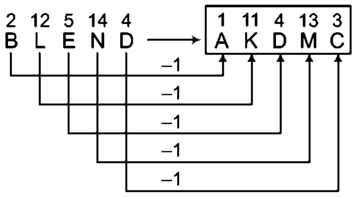
Ex **10** If in a certain code language 'FRESH' is written as 'EQDRG', then how will 'BLEND' be written in that code?

(a) AKDMC (b) AKDCM (c) AKMDC (d) AKCMD

Sol. (*a*) As,


6 18 5 19 8
F R E S H
5 17 4 18 7
E Q D R G
–1
–1
–1
–1
–1

Similarly,


2 12 5 14 4
B L E N D
1 11 4 13 3
A K D M C
–1
–1
–1
–1
–1

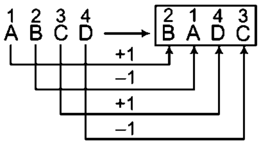
∴ BLEND = AKDMC

C. Mixed Sequence Coding (Forward and Backward)

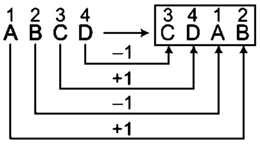
Under this pattern, forward and backward sequence coding take place simultaneously.

Let us consider the coding of ABCD which can be done in following ways

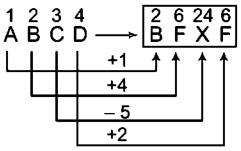
(i)


1 2 3 4
A B C D
2 1 4 3
B A D C
+1
–1
+1
–1

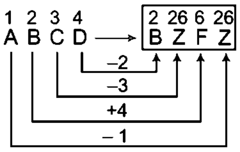
(ii)


1 2 3 4
A B C D
3 4 1 2
C D A B
–1
+1
–1
+1

(iii)


1 2 3 4
A B C D
2 6 24 6
B F X F
+1
+4
– 5
+2

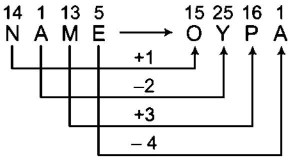
(iv)


1 2 3 4
A B C D
2 26 6 26
B Z F Z
–2
–3
+4
– 1

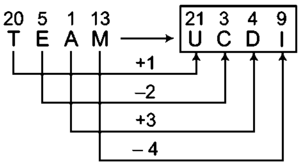
Ex **11** If in a certain code language 'NAME' is written as 'OYPA', then how will 'TEAM' be coded in that language?

(a) UCDI (b) UCID (c) UICD (d) UDCI

Sol. (*a*) As,


14 1 13 5
N A M E
15 25 16 1
O Y P A
+1
–2
+3
– 4

Similarly,


20 5 1 13
T E A M
21 3 4 9
U C D I
+1
–2
+3
– 4

∴ TEAM = UCDI

D. Direct Letter Coding

In this type of coding, some letter group/words are assigned some codes which do not follow any rule but are direct codes for a particular letter of the letter group/ words. These direct codes are then used to form the codes of an another given word.

Example given below will give a better idea about such type of questions

***Ex* 12** If 'SILVER' is coded as 'ZXYBDQ ' and 'KAMAL' is coded as LNCNY, then what will be the code for 'VIKAS'?

(a) BXNLZ (b) ZXYCN (c) BXLNZ (d) LNCBD

Sol. (c) Here,

S—Z and K—L
I—X A—N
L—Y M—C
V—B A—N
E—D L—Y
R—Q

So, the code for VIKAS will be 'BXLNZ'.

Practice Corner **4.2**

Build your Confidence...

1. If in a certain code language 'BRIGHT' is written as 'CSJHIU', then how will 'PUNTER' be written in that language?

(a) QVOUSF (b) QOVFUS (c) QVOFUS (d) QVOUFS

2. If in a certain code language 'NAME' is written as 'MZLD', then how will 'PEON' be coded in that language?

(a) ODNM (b) ODMN (c) ONDM (d) OMND

3. If in a certain code language 'SPARK' is written as 'TQBSL', then how will 'FLAME' be written in that language? **[SSC (CGL) 2010]**

(a) GMBNF (b) GNBNF (c) GMCND (d) GMBMF

4. If in a certain code language 'MARS' is written as 'ZNEF', then how will 'ARMS' be written in that language? **[SSC (CPO) 2011]**

(a) NEZF (b) FENZ (c) NFZE (d) MEZF

5. If in a certain code language 'COLD' is written as 'DPME', then how will 'CHINA' be written in that language? **[UP PCS 2007]**

(a) DHIMB (b) DJKMB (c) DIJOB (d) DIJPBM

6. If in a certain code language 'SISTER' is written as 'RHRSDQ', then how will 'UNCLE' be written in that language? **[SSC (DEO) 2010]**

(a) TMBDK (b) TMBKD (c) TMDKB (d) TMKBD

7. If in a certain code language 'MARCH' is written as 'OCTEJ', then how will 'RETURN' be written in that language? **[IAS 2006]**

(a) TFUVSM (b) QGSTQM (c) TGVWTP (d) TGRVSO

8. If in a certain code language 'PERSON' is written as 'SHUVRQ', then how will 'MOTHER' be coded in that language?

(a) PRWKHU (b) PRWKUH (c) PRWUKH (d) PRWUHK

9. If in a certain code language 'PERSON' is coded as 'STXWJU', then how will 'MOTHER' be coded in that language?

(a) RTYUJM (b) RTYJMU (c) WJMYTR (d) RTYMUJ

10. In a certain code, 'FLOWERS' is written as 'EKNVDQR'. How will 'SUPREME' be written in that code? **[RRB (ASM) 2011]**

(a) TQDROLD (b) RTODQLD (c) TQDDROL (d) RTOQDLD

11. If in a certain code language 'TRIVENDRUM' is written as 'VTKXGPFTWO', then how will 'ERNAKULAM' be written in that language? **[UP PCS 2007]**

(a) GTPCMWNOC (b) GTPCMWNCO
(c) GTPCMNWCO (d) GTPMCWNCO

12. If in a certain code language 'EARTH' is written as 'JVTCG', then how will 'GLOBE' be written in that language?

(a) GDQNI (b) GDQIN
(c) GDNIQ (d) GDIQN

13. If in a certain code language 'SAND' is written as 'VDQG', 'BIRD' is written as 'ELUG', then how will 'LOVE' be written in that language?

(a) PRYG (b) ORTG
(c) NPUH (d) ORYH

14. If in a certain code language ‘COME’ is coded as ‘EQOG’, ‘FUN’ is coded as ‘HWP’, then how will ‘LANKY’ be coded in that language?
(a) NCPMA (b) NCPAM (c) NCAMP (d) NPCMA

15. If in a certain code language ‘VANDANA’ is coded as ‘TYLBYLY’, ‘TOP’ is coded as ‘RMN’, then how will ‘SUMPTUOUS’ be coded in that language?
(a) QSKNRSMSQ (b) QSKNRSMQS
(c) QSKNRMSQS (d) QSKRNMSQS

16. If in a certain code language ‘BUTTER’ is written as ‘CVUUFS’ and ‘BREAD’ is written as ‘CSFBE’, then how will ‘COFFEE’ be written in that code language?
(a) DPGGFF (b) GGDPFF (c) GDPGFF (d) FDDPGG

17. If in a certain code language ‘TEAM’ is written as ‘YJFR’, then how will ‘CREATE’ be written in that language? **[UBI (Clerk) 2011]**
(a) HWJFJY (b) HWJFYJ (c) HWFJYZ (d) HWFJYJ
(e) None of these

18. If ‘RATS’ is coded as ‘ENGF’, then how will ‘STAR’ be coded?
(a) FGNE (b) FNGE (c) FENG (d) FNEG

19. In a certain code language ‘DEAR’ is coded as ‘FGCT’, then how would you code ‘READ’ in that language?
(a) TGCF (b) FGCF (c) TSFC (d) TCGF

20. In a certain code language ‘SHORE’ is written as ‘QFMPC’, then how will ‘WNKGL’ is written in that language? **[Syndicate Bank (Clerk) 2010]**
(a) NIMPY (b) YPMIN (c) ULIEJ (d) ULIGE
(e) None of these

21. In a certain code, SOBER is written as RNADQ. How can LOTUS be written in that code? **[SSC (Multitasking) 2013]**
(a) KNSTR (b) MPUWT (c) KMSTR (d) LMRST

22. If ‘FISH’ is written as ‘EHRG’ in a certain code, then how would ‘JUNGLE’ be written in that same code?
(a) ITMFKD (b) ITNFKD (c) KVOHMF (d) TIMFKD

23. If ‘HAPPY’ is written as ‘IBQQZ’ in a certain code, then how would ‘SORROW’ be written in that code?
(a) TPSSXX (b) TTPSSPX
(c) TPPSPX (d) None of these

24. If code for ‘SET’ is ‘UGV’, then what would be the code for ‘BRICK’? **[Delhi Police (Constable) 2009]**
(a) CSJDL (b) DSJEM (c) DTKEM (d) DTKFM

25. In a certain code ‘RAIN’ is writen as ‘TCKP’. How is ‘CLOUD’ written in that code? **[SSC (Steno) 2011]**
(a) ENQWF (b) EMQWF (c) FNQWE (d) ENRWF

26. If ‘DAILY’ is coded as ‘XKHZC’ in a code language, then how would you code ‘FERTILE’ in that code language?
(a) DKHSEDQS (b) DMHUQFE (c) DKHSQDE (d) DJHRQCE

27. If in a certain code language ‘ARIHANT’ is written as ‘BTLLFTA’, then how will ‘HONESTY’ be written in that code?
(a) IQQIZFX (b) IQQXIZF (c) IQQIXZF (d) IQQIXFZ

28. If in a certain code language ‘PRIYA’ is written as ‘BALVU’, then how will ‘NIGHT’ be written in that language?
(a) UJJMS (b) UJJSM (c) UJJMT (d) UMJJS

29. If ‘MUSICAL’ is written as ‘KWQKACJ’, then how can ‘SPRINKLE’ be written? **[SSC (CGL) 2013]**
(a) QRBKCNJG (b) QNPGLIJC
(c) QRPKLMJG (d) URTKPMNG

30. If in a certain code language ‘NORMAL’ is coded as ‘RMVKEJ’, then how will ‘RAMESH’ be coded in that language?
(a) VYQWFC (b) VYQFWC (c) VYQCWF (d) VYQCFW

31. If in a certain code language ‘RUNNER’ is written as ‘SUMMER’, then how will ‘WINTER’ be written in that language? **[UP PCS 2006]**
(a) XIMSER (b) VINTER (c) SINVER (d) XIOUER

32. If in a certain code, ‘GOODNESS’ is coded as ‘HNPCODTR’. How will ‘GREATNESS’ be coded in that language?
(a) HQFZUODTR (b) HQFZUMFRT
(c) HQFZSMFRT (d) FSDBSODTR

33. If in a certain code language ‘BETTER’ is written as ‘EHWQBO’, then how will ‘FORMAL’ be written in that language?
(a) IRJUXI (b) IRUIXJ (c) IRUJXI (d) IRUJIX

34. If in a certain code language ‘KAMLESH’ is written as ‘GUJLMCO’, then how will ‘NATURAL’ be written in that language?
(a) TCNUPCV (b) TCOUPVC (c) TCUOPVC (d) TCOUVCP

35. If in a certain code language ‘GREAT’ is written as ‘UBESH’, then how will ‘NIGHT’ be written in that language?
(a) UIJOG (b) UIGOK
(c) UIGOJ (d) UIGJO

36. If in a certain code language ‘WHEN’ is written as ‘VGFO’, then how will ‘POLICE’ be written in that language? **[UBI (Clerk) 2011]**
(a) ONKHBD (b) ONKJDF
(c) OPKJBF (d) QPMHBD
(e) None of these

37. If in a certain code 'BOXER' is written as 'AQWGQ', then how will 'VISIT' be written in that language?
(a) UKRKU (b) UKRKS (c) WKRKU (d) WKRKS

38. If in a certain code language 'PAINTER' is written as 'NCGPRGP', then, how will 'REASON' be written in that language?
(a) PCYQMN (b) PGYQMN (c) PGYUMP (d) PGYUPM

39. In a certain code language 'SOCIAL' is written as 'TQFMFR', then how will 'DIMPLE' be written in that language?
(a) EKPTQK (b) EKPQPJ (c) EKPSPJ (d) EKPSOH

40. If 'BEAUTY' is coded as 'DHEZZF', then how will 'FLOWER' be written in that language?
(a) HSOBYK (b) HBOSKY (c) HOSBKY (d) SBKYOH

41. If 'THRASH' is coded as 'UGSZTG', then how will 'HEAD' be coded?
(a) IECD (b) GDZC (c) IDBC (d) GDBC

42. In a certain code language 'BOUND' is written as 'OBTDN', then how will 'CODES' be written in that language?
[Syndicate Bank (Clerk) 2008]
(a) SECOC (b) OCESE (c) OCCSE (d) OCCES
(e) None of these

43. If in a certain code language 'COMPUTE' is coded as 'FSVONND', then how will 'DISTURB' be coded in that language? **[OBC (PO) 2009]**
(a) CSVSTHE (b) CQVSTHE (c) CQVTSHE (d) CSVTSHE
(e) None of these

44. In a certain code language 'NONE' is written as 'LQLG', then how will 'LAMB' be written in that code?
(a) JCKD (b) JCDK (c) JDCK (d) JDKC

45. If in a certain code language 'FAME' is written as 'LGGY', then how will 'LION' be coded in that language?
(a) RHIO (b) ROIH (c) RHOI (d) RIOH

46. If in a certain code language 'RELATED' is written as 'EFUBKDQ', then how will 'RETAINS' be written in that language? **[PNB (Clerk) 2010]**
(a) SDQBTOJ b) JOTBQDS (c) JOTBSDQ (d) TOJBSDQ
(e) None of these

47. If 'TOMB' is coded as 'MBOR', then how would you coded to 'GOAL'?
(a) ALOG (b) ALOE (c) LAOG (d) EALO

48. If in a certain code language, 'MIRACLE' is coded as 'NKUEHRL', then how is 'GAMBLE' coded in that same code language?
(a) JDOCMF (b) CLEMNK (c) HCPFQK (d) AELGMN

49. In a certain code, 'BELIEF' is written as 'AFKKDH'. How would 'SELDOM' be written in that code?
(a) RDKCHL (b) RFKENM (c) RFKFNO (d) TFKENP

50. In a certain code, 'BISLERI' is written as 'CHTKFQJ' and 'AQUA' is written as 'BPVZ'. How is 'KING FISHER' written in that same code?
(a) LHOFGHTGFQ (b) LHOGFTHGFQ
(c) LHOQFTHGFQ (d) LHOHGTFGFQ

51. In a certain code language, 'CURATIVE' is written as 'BSVDDUHS'. How 'STEAMING' is to be written in the same code language?
(a) BFUTFMHL (b) TUFBFMHL
(c) BFUTLHMF (d) BFUTHOJN

52. In a certain code, 'MOUSE' is written as 'PRUQC'. How is 'SHIFT' written in that same code? **[Vijaya Bank (Clerk) 2010]**
(a) VKIRD (b) VKIDR (c) VJIDR (d) VIKRD
(e) None of these

53. If 'LOFTY' is coded as 'LPFUY', then 'DWARF' will be written as **[RBI (Grade 'B') 2011]**
(a) DXASF (b) DXBSG (c) DXATF (d) DWBSG

54. In a certain code 'PRISM' is written as 'OSHTL' and 'RUBLE' is written as 'QVAMD'. How will 'WHORL' be written in that code? **[Allahabad Bank (PO) 2011]**
(a) XIPSM (b) VINSK (c) UINSK (d) XGPQM
(e) None of these

55. If in a certain code language 'HONESTY' is written as 'ABCXZDQ', then how will 'TONY' be written in that language? **[SSC (CPO) 2010]**
(a) DBCQ (b) QDCX (c) CBXZ (d) CQDC

56. If in a certain code language 'TEMPERATURE' is written as 'BZQDYXVBNXZ', then how will 'RAMP' be written in that language?
(a) XQVD (b) XDVQ (c) XVDQ (d) XVQD

57. If in a certain code language 'BEAUTIFUL' is written as 'CDOGHJKMN', then how will 'LEAF' be written in that language? **[SSC (FCI) 2010]**
(a) NDOK (b) KNND (c) ODNK (d) DKON

58. If in a certain code language 'SINGER' is written as 'AIBCED', then how will 'GINGER' be written in that language?
(a) CBIEGD (b) CIBCED (c) CBICED (d) CIBECD

59. If in a certain code language 'STAG' is written as 'HGZT', 'HORN' is written as 'SLIM', then how will 'NORTH' be written in that language? **[SSC (Multitasking) 2010]**
(a) NLGMI (b) MLIGS (c) MGLIS (d) NLGIS

60. If in a certain code language 'PEN' is written as 'NZO', 'BARK' is written as 'CTSL', then how will 'PRANK' be written in that language? **[SSC (Multitasking) 2013]**

(a) NZTOL (b) CSTZN (c) NSTOL (d) NTSLO

61. If in a certain code language 'COULD' is written as 'BNTKC', 'MARGIN' is written as 'LZQFHM', then how will 'MOULDING' be written in that language? **[Chattisgarh PCS 2008]**

(a) LNTKCHMF (b) CNMFINTK (c) LNKTCHMF (d) NITKHCMP

62. If in a certain code language 'PARENT' is written as 'BDFGJK' and 'CHILDREN' is written as 'MOXQUFGJ', then how will 'REPRINT' be written in that language? **[SSC (CPO) 2005]**

(a) FGBFXGD (b) BGBFXJK (c) FGBUXJK (d) FGBFXJK

63. If the word 'TABLECLOTH' is coded as 'XEMRANRIXT', how can 'HOTEL' be coded? **[RRB (ASM) 2011]**

(a) RIXAT (b) TIXAR (c) TAXIR (d) RAXIT

(e) None of these

64. In a coding system, 'JUNE' is written as 'PQRS' and 'AUGUST' is written as 'WQFQMN'. How can 'GUEST' be written in the same coding language?

(a) FQTMN (b) FPSMN (c) FQSMN (d) FQSNM

65. If the word 'EARTH' is written as 'QPMZS' in a coded form, how can 'HEART' be written in the same coding language?

(a) SQPZM (b) SQMPZ (c) SPQZM (d) SQPMZ

66. If the word 'ANU' be written as 'MSN' and 'VINAY' be written as 'PLSMZ' in a code language, how can we express the word 'ANUVI' in the same language?

(a) MSNPL (b) MPNSL (c) MSMPL (d) MQMPL

67. In a code language, 'APPLE' is written as 'PQQRS', 'RIS' is written as 'ABC' and 'MANGO' is written as 'TPXYZ'. How will 'ROSE' be written in that same code language?

(a) ABCS (b) ACBS (c) AZSC (d) AZCS

68. In a code language, 'PRINCE' is written as 'FLOWER' and 'PRINCESS' is written as 'FLOWERSS'. Which of the following word would be coded as 'SLOWERS'?

(a) SRINCES (b) SIRNCES

(c) SRNICES (d) None of these

69. In a code language, 'ORGANISATION' is written as 'CBDWLQJWYQCL' and 'OPERATION' is written as 'CXFBWYQCL'. How would 'SEPARATION' be coded?

(a) EJXEBYQCL (b) JFQYWBCXQL

(c) JFXWBWYQCL (d) QCLYWBFXJE

70. In a certain code, 'ZOOM' is written as 'POON' and 'ROAD' is written 'QOBE'. How would 'NOMP' be coded in that code language?

(a) PONX (b) QOHB (c) XONY (d) MONZ

71. In a certain code, 'FIRE' is written as 'QHOE' and 'MOVE' as 'ZMWE'. Following the same rule of coding, what should be the code for the word 'OVER'? **[SSC (FCI) 2007]**

(a) MWED (b) MWEO (c) MWOE (d) MWZO

72. In a certain code, 'STOVE' is written as 'FNBLK', then how will 'VOTES' be written in the same code? **[SSC (CPO) 2007]**

(a) FLKBN (b) LBNKF (c) LKNBF (d) LNBKF

73. In a certain code, 'CERTAIN' is coded as 'XVIGZRM' 'SEQUENCE' is coded as 'HVJFVMXV'. How would 'REQUIRED' be coded? **[SSC (CGL) 2012]**

(a) FJIVWVIR (b) VJIFWTRV (c) WVJRIFVI (d) IVJFRIVW

74. If 'WATER' is written as 'YCVGT', then what is written as 'HKTG'? **[SSC (CGL) 2013]**

(a) IRFE (b) FIRE (c) REFI (d) ERIF

75. If in a certain code language 'POPULAR' is written as 'QPQVMBS', then what word will be written for the code 'GBNPVT'? **[SSC (CPO) 2011]**

(a) FASOUM (b) FAMOUS (c) FAMOSU (d) FAMSUO

76. If in a certain code language 'ORIENTAL' is written as 'DHQNMBUO', then how will 'SCHOOLED' be written in that language? **[Andhra Bank (PO) 2011]**

(a) RBGNPMFE (b) NGBREFMP

(c) RBGNEFMP (d) NGBRPMFE

(e) None of these

77. If in a certain code language 'CROWNED' is written as 'PSDVEFO', then how will 'STREAMS' be written in that language? **[IBPS (PO) 2011]**

(a) SUTDBNT (b) TUSDTNB (c) SUTDTNB (d) QSRDTNB

(e) None of these

78. If in a certain language 'SOLDIER' is written as 'JFSCRNK', then how will 'GENIOUS' be written in that language? **[PNB (PO) 2011]**

(a) PVTHHFO (b) PNTHFDM (c) PVTHMDF (d) TVPHFDM

(e) None of these

79. If in a certain code language 'DENIAL' is coded as 'MDCMBJ', then how will 'SOURCE' be written in that language? **[PNB (Clerk) 2009]**

(a) TNRFDS (b) RNTFDS (c) TNRSDF (d) TRNDBQ

(e) None of these

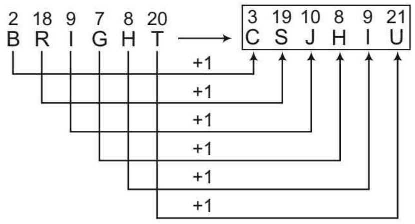
80. In a certain code, 'TERMINAL' is written as 'NSFUMBOJ' and 'TOWERS' is written as 'XPUTSF'. How is 'MATE' written in that same code? **[IBPS (Clerk) 2012]**

(a) FUBN (b) UFNB (c) BNFU (d) BNDS

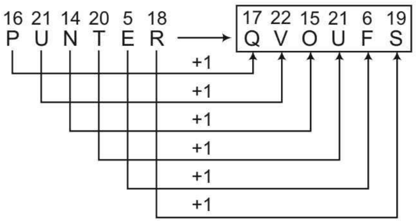
(e) None of these

Response & Interpretations (4.2)

1. (*d*) As,

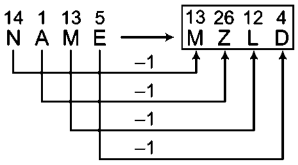

2 18 9 7 8 20
B R I G H T
3 19 10 8 9 21
C S J H I U
+1
+1
+1
+1
+1
+1

Similarly,

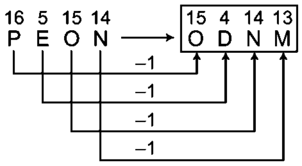

16 21 14 20 5 18
P U N T E R
17 22 15 21 6 19
Q V O U F S
+1
+1
+1
+1
+1
+1

∴ PUNTER ⇒ QVOUFS

2. (*a*) As,

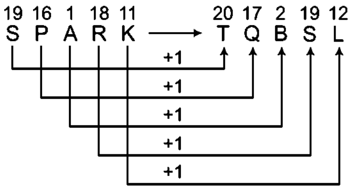

14 1 13 5
N A M E
13 26 12 4
M Z L D
–1
–1
–1
–1

Similarly,

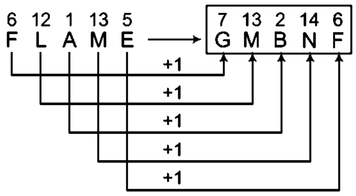

16 5 15 14
P E O N
15 4 14 13
O D N M
–1
–1
–1
–1

∴ PEON ⇒ ODNM

3. (*a*) As,

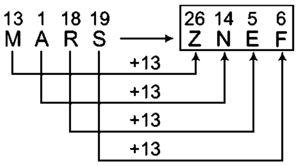

19 16 1 18 11
S P A R K
20 17 2 19 12
T Q B S L
+1
+1
+1
+1
+1

Similarly,

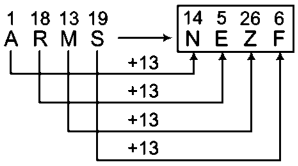

6 12 1 13 5
F L A M E
7 13 2 14 6
G M B N F
+1
+1
+1
+1
+1

∴ FLAME ⇒ GMBNF

4. (*a*) As,

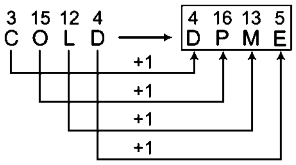

13 1 18 19
M A R S
26 14 5 6
Z N E F
+13
+13
+13
+13

Similarly,

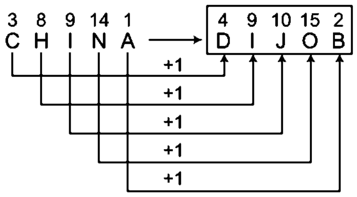

1 18 13 19
A R M S
14 5 26 6
N E Z F
+13
+13
+13
+13

∴ ARMS ⇒ NEZF

5. (*c*) As,

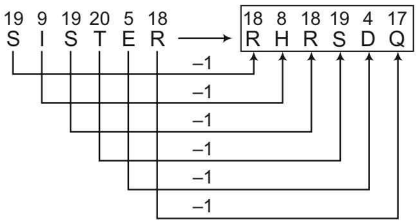

3 15 12 4
C O L D
4 16 13 5
D P M E
+1
+1
+1
+1

Similarly,

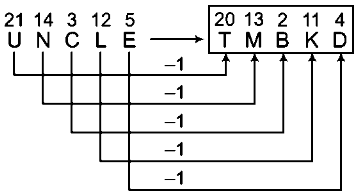

3 8 9 14 1
C H I N A
4 9 10 15 2
D I J O B
+1
+1
+1
+1
+1

∴ CHINA ⇒ DIJOB

6. (*b*) As,

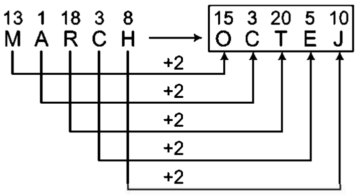

19 9 19 20 5 18
S I S T E R
18 8 18 19 4 17
R H R S D Q
–1
–1
–1
–1
–1
–1

Similarly,

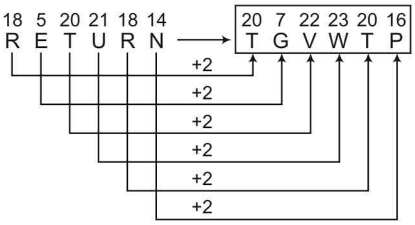

21 14 3 12 5
U N C L E
20 13 2 11 4
T M B K D
–1
–1
–1
–1
–1

∴ UNCLE ⇒ TMBKD

7. (*c*) As,

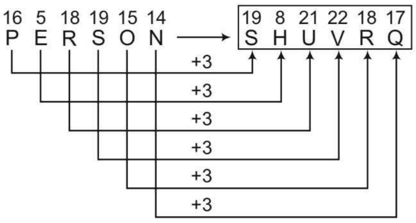

13 1 18 3 8
M A R C H
15 3 20 5 10
O C T E J
+2
+2
+2
+2
+2

Similarly,

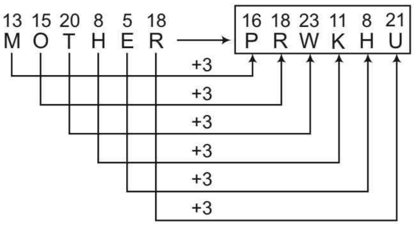

18 5 20 21 18 14
R E T U R N
20 7 22 23 20 16
T G V W T P
+2
+2
+2
+2
+2
+2

∴ RETURN ⇒ TGVWTP

8. (*a*) As,

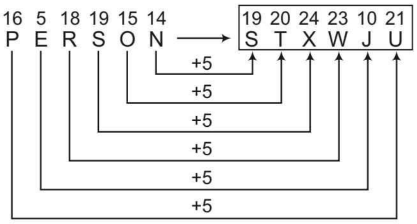

16 5 18 19 15 14
P E R S O N
19 8 21 22 18 17
S H U V R Q
+3

Similarly,

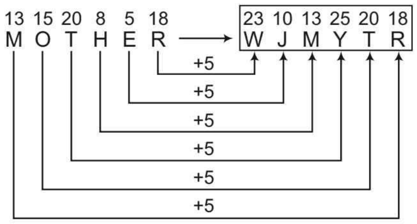

13 15 20 8 5 18
M O T H E R
16 18 23 11 8 21
P R W K H U
+3

∴ MOTHER ⇒ PRWKHU

9. (*c*) As,

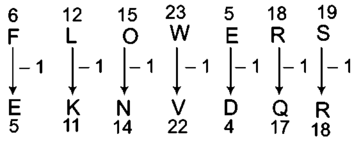

16 5 18 19 15 14
P E R S O N
19 20 24 23 10 21
S T X W J U
+5

Similarly,

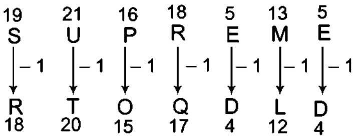

13 15 20 8 5 18
M O T H E R
23 10 13 25 20 18
W J M Y T R
+5

∴ MOTHER ⇒ WJMYTR

10. (*d*) As,

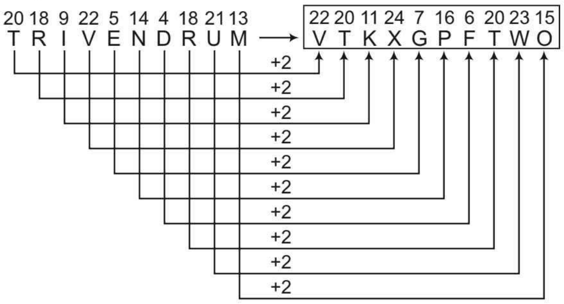

6 12 15 23 5 18 19
F L O W E R S
–1
E K N V D Q R
5 11 14 22 4 17 18

Similarly,

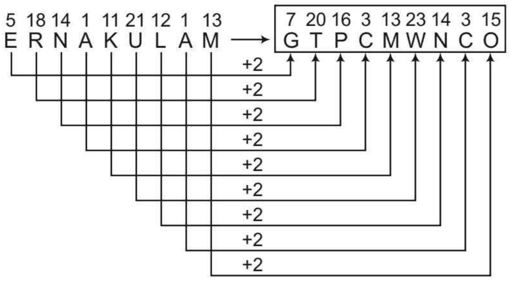

19 21 16 18 5 13 5
S U P R E M E
–1
R T O Q D L D
18 20 15 17 4 12 4

∴ SUPREME ⇒ RTOQDLD

11. (*b*) As,

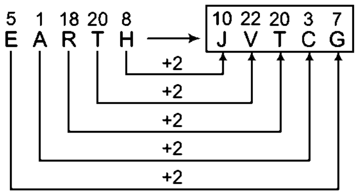

20 18 9 22 5 14 4 18 21 13
T R I V E N D R U M
22 20 11 24 7 16 6 20 23 15
V T K X G P F T W O
+2

Similarly,

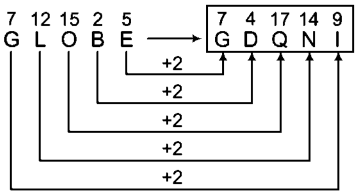

5 18 14 1 11 21 12 1 13
E R N A K U L A M
7 20 16 3 13 23 14 3 15
G T P C M W N C O
+2

∴ ERNAKULAM ⇒ GTPCMWNCO

12. (*a*) As,

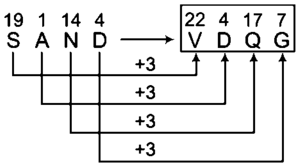

5 1 18 20 8
E A R T H
10 22 20 3 7
J V T C G
+2

Similarly,

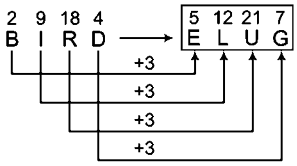

7 12 15 2 5
G L O B E
7 4 17 14 9
G D Q N I
+2

∴ GLOBE ⇒ GDQNI

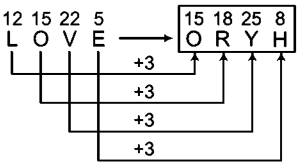
13. (*d*) As,


19 1 14 4
S A N D
22 4 17 7
V D Q G
+3

and

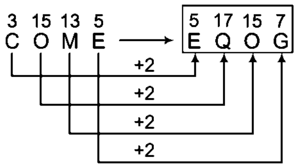

2 9 18 4
B I R D
5 12 21 7
E L U G
+3

Similarly,

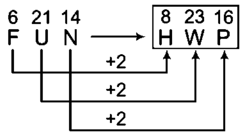

12 15 22 5
L O V E
15 18 25 8
O R Y H
+3

∴ LOVE ⇒ ORYH

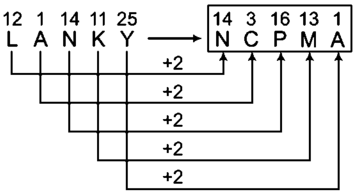
14. (*a*) As,


3 15 13 5
C O M E
5 17 15 7
E Q O G
+2

and

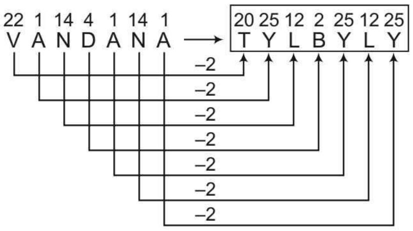

6 21 14
F U N
8 23 16
H W P
+2

Similarly,

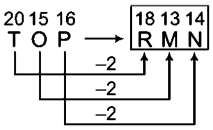

12 1 14 11 25
L A N K Y
14 3 16 13 1
N C P M A
+2
+2
+2
+2
+2

∴ LANKY ⇒ NCPMA

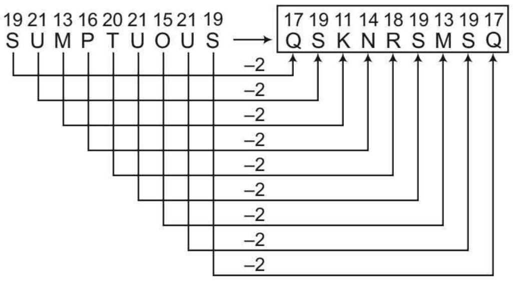
15. (*a*) As,


22 1 14 4 1 14 1
V A N D A N A
20 25 12 2 25 12 25
T Y L B Y L Y
–2
–2
–2
–2
–2
–2
–2

and

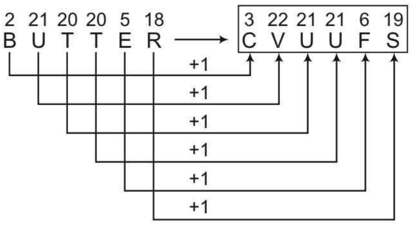

20 15 16
T O P
18 13 14
R M N
–2
–2
–2

Similarly,

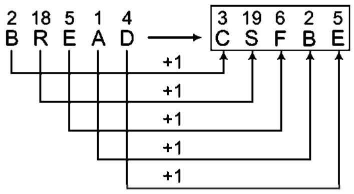

19 21 13 16 20 21 15 21 19
S U M P T U O U S
17 19 11 14 18 19 13 19 17
Q S K N R S M S Q
–2
–2
–2
–2
–2
–2
–2
–2
–2

∴ SUMPTUOUS ⇒ QSKNRSMSQ

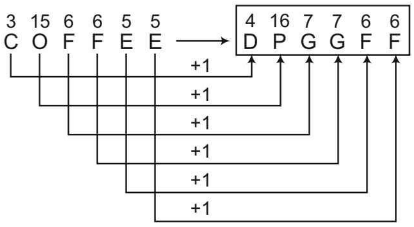
16. (*a*) As,


2 21 20 20 5 18
B U T T E R
3 22 21 21 6 19
C V U U F S
+1
+1
+1
+1
+1
+1

and

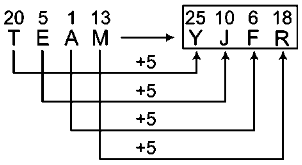

2 18 5 1 4
B R E A D
3 19 6 2 5
C S F B E
+1
+1
+1
+1
+1

Similarly,

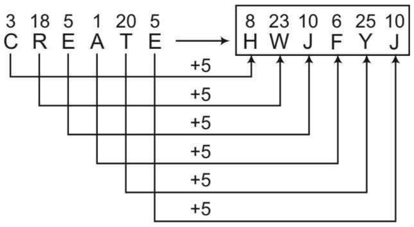

3 15 6 6 5 5
C O F F E E
4 16 7 7 6 6
D P G G F F
+1
+1
+1
+1
+1
+1

∴ COFFEE ⇒ DPGGFF

17. (*b*) As,

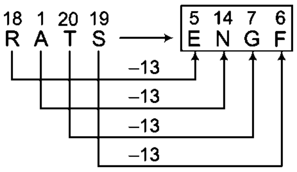

20 5 1 13
T E A M
25 10 6 18
Y J F R
+5
+5
+5
+5

Similarly,

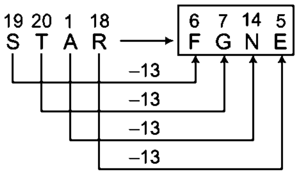

3 18 5 1 20 5
C R E A T E
8 23 10 6 25 10
H W J F Y J
+5
+5
+5
+5
+5
+5

∴ CREATE ⇒ HWJFYJ

18. (*a*) As,

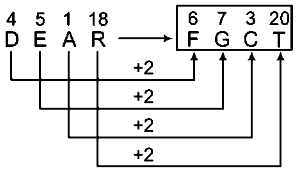

18 1 20 19
R A T S
5 14 7 6
E N G F
–13
–13
–13
–13

Similarly,

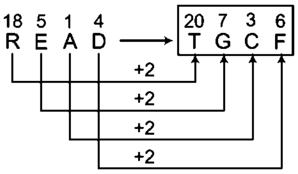

19 20 1 18
S T A R
6 7 14 5
F G N E
–13
–13
–13
–13

∴ STAR ⇒ FGNE

19. (*a*) As,

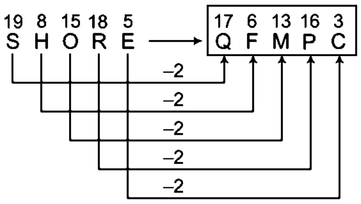

4 5 1 18
D E A R
6 7 3 20
F G C T
+2
+2
+2
+2

Similarly,

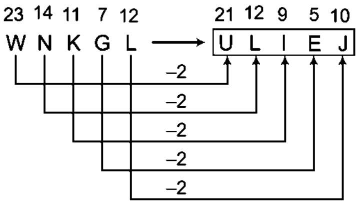

18 5 1 4
R E A D
20 7 3 6
T G C F
+2
+2
+2
+2

∴ READ ⇒ TGCF

20. (*c*) As,

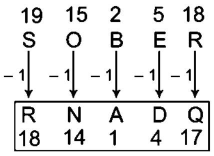

19 8 15 18 5
S H O R E
17 6 13 16 3
Q F M P C
–2
–2
–2
–2
–2

Similarly,

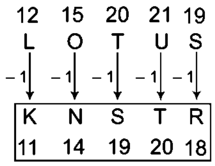

23 14 11 7 12
W N K G L
21 12 9 5 10
U L I E J
–2
–2
–2
–2
–2

∴ WNKGL ⇒ ULIEJ

21. (*a*) As,


19 15 2 5 18
S O B E R
−1 −1 −1 −1 −1
R N A D Q
18 14 1 4 17

Similarly,


12 15 20 21 19
L O T U S
−1 −1 −1 −1 −1
K N S T R
11 14 19 20 18

∴ LOTUS ⇒ KNSTR

22. (*a*) As,

$F \xrightarrow{-1} E$
$I \xrightarrow{-1} H$
$S \xrightarrow{-1} R$
$H \xrightarrow{-1} G$

Similarly,

$J \xrightarrow{-1} I$
$U \xrightarrow{-1} T$
$N \xrightarrow{-1} M$
$G \xrightarrow{-1} F$
$L \xrightarrow{-1} K$
$E \xrightarrow{-1} D$

∴ JUNGLE ⇒ ITMFKD

23. (*d*) As,

$H \xrightarrow{+1} I$
$A \xrightarrow{+1} B$
$P \xrightarrow{+1} Q$
$P \xrightarrow{+1} Q$
$Y \xrightarrow{+1} Z$

Similarly,

$S \xrightarrow{+1} T$
$O \xrightarrow{+1} P$
$R \xrightarrow{+1} S$
$R \xrightarrow{+1} S$
$O \xrightarrow{+1} P$
$W \xrightarrow{+1} X$

∴ SORROW ⇒ TPSSPX

24. (*c*) As,

$S \xrightarrow{+2} U$
$E \xrightarrow{+2} G$
$T \xrightarrow{+2} V$

Similarly,

$B \xrightarrow{+2} D$
$R \xrightarrow{+2} T$
$I \xrightarrow{+2} K$
$C \xrightarrow{+2} E$
$K \xrightarrow{+2} M$

∴ BRICK ⇒ DTKEM

25. (*a*) As,

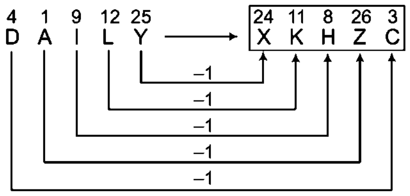
$R \xrightarrow{+2} T$
$A \xrightarrow{+2} C$
$I \xrightarrow{+2} K$
$N \xrightarrow{+2} P$

Similarly,

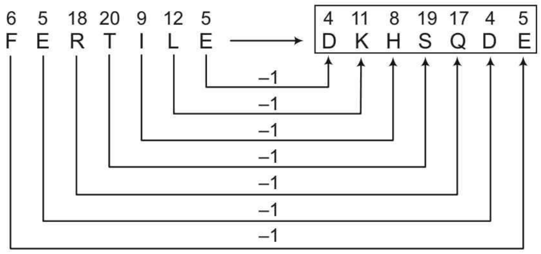
$C \xrightarrow{+2} E$
$L \xrightarrow{+2} N$
$O \xrightarrow{+2} Q$
$U \xrightarrow{+2} W$
$D \xrightarrow{+2} F$

∴ CLOUD ⇒ ENQWF

26. (*c*) As,

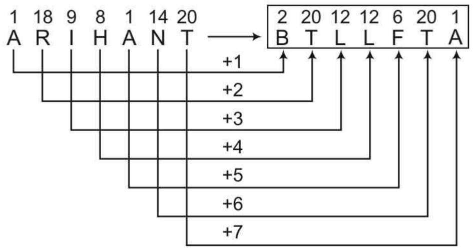

4 1 9 12 25
D A I L Y
24 11 8 26 3
X K H Z C
−1
−1
−1
−1
−1

Similarly,

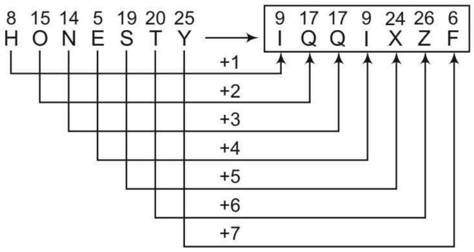

6 5 18 20 9 12 5
F E R T I L E
4 11 8 19 17 4 5
D K H S Q D E
−1
−1
−1
−1
−1
−1
−1

∴ FERTILE ⇒ DKHSQDE

27. (*c*) As,

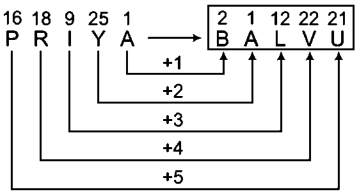

1 18 9 8 1 14 20
A R I H A N T
2 20 12 12 6 20 1
B T L L F T A
+1
+2
+3
+4
+5
+6
+7

Similarly,

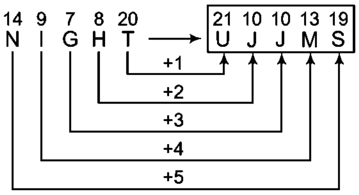

8 15 14 5 19 20 25
H O N E S T Y
9 17 17 9 24 26 6
I Q Q I X Z F
+1
+2
+3
+4
+5
+6
+7

∴ HONESTY ⇒ IQQIXZF

28. (*a*) As,

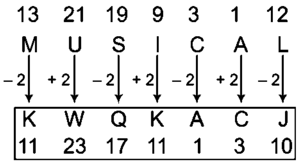

16 18 9 25 1
P R I Y A
2 1 12 22 21
B A L V U
+1
+2
+3
+4
+5

Similarly,

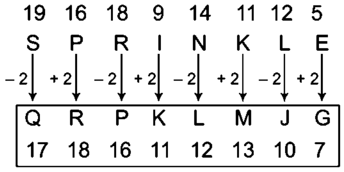

14 9 7 8 20
N I G H T
21 10 10 13 19
U J J M S
+1
+2
+3
+4
+5

∴ NIGHT ⇒ UJJMS

29. (*c*) As,

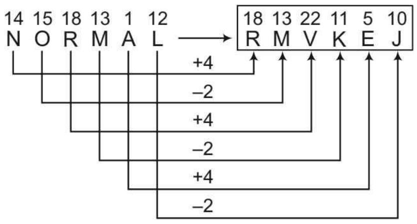

13 21 19 9 3 1 12
M U S I C A L
−2 +2 −2 +2 −2 +2 −2
K W Q K A C J
11 23 17 11 1 3 10

Similarly,

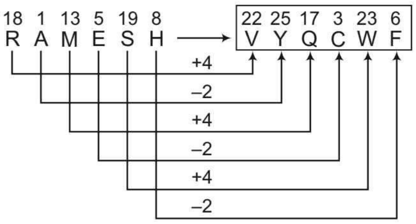

19 16 18 9 14 11 12 5
S P R I N K L E
−2 +2 −2 +2 −2 +2 −2 +2
Q R P K L M J G
17 18 16 11 12 13 10 7

∴ SPRINKLE ⇒ QRPKLMJG

30. (*c*) As,

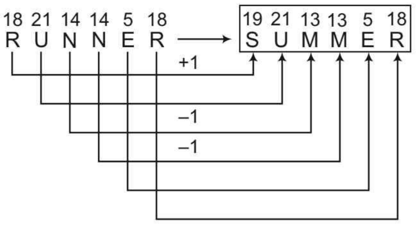

14 15 18 13 1 12
N O R M A L
18 13 22 11 5 10
R M V K E J
+4
−2
+4
−2
+4
−2

Similarly,

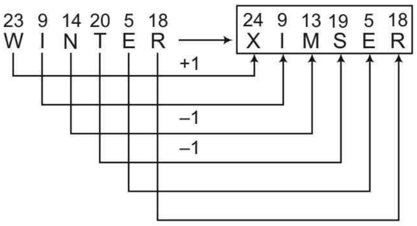

18 1 13 5 19 8
R A M E S H
22 25 17 3 23 6
V Y Q C W F
+4
−2
+4
−2
+4
−2

∴ RAMESH ⇒ VYQCWF

31. (*a*) As,

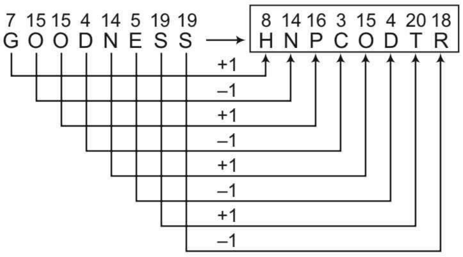

18 21 14 14 5 18
R U N N E R
19 21 13 13 5 18
S U M M E R
+1
−1
−1

Similarly,

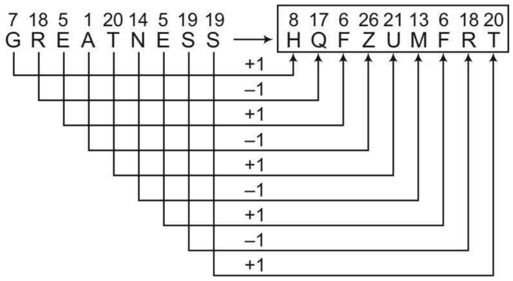

23 9 14 20 5 18
W I N T E R
24 9 13 19 5 18
X I M S E R
+1
−1
−1

∴ WINTER ⇒ XIMSER

32. (*b*) As,

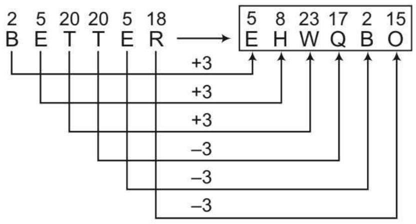

7 15 15 4 14 5 19 19
G O O D N E S S
8 14 16 3 15 4 20 18
H N P C O D T R
+1
−1
+1
−1
+1
−1
+1
−1

Similarly,

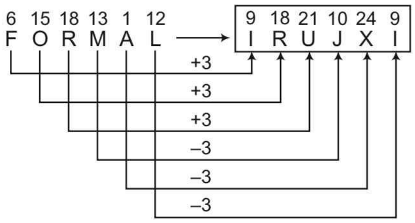

7 18 5 1 20 14 5 19 19
G R E A T N E S S
8 17 6 26 21 13 6 18 20
H Q F Z U M F R T
+1
−1
+1
−1
+1
−1
+1
−1
+1

∴ GREATNESS ⇒ HQFZUMFRT

33. (*c*) As,

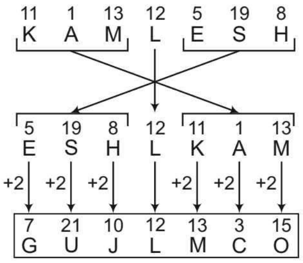

2 5 20 20 5 18
B E T T E R
5 8 23 17 2 15
E H W Q B O
+3
+3
+3
−3
−3
−3

Similarly,

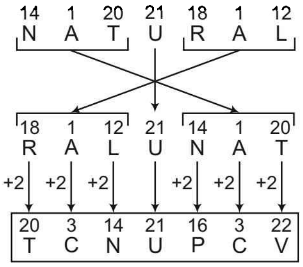

6 15 18 13 1 12
F O R M A L
9 18 21 10 24 9
I R U J X I
+3
+3
+3
−3
−3
−3

∴ FORMAL ⇒ IRUJXI

34. (*a*) As,

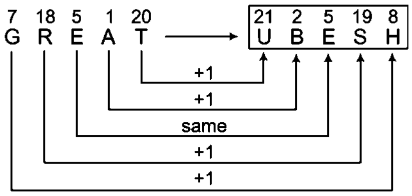

11 1 13 12 5 19 8
K A M L E S H
5 19 8 12 11 1 13
E S H L K A M
+2 +2 +2 +2 +2 +2
7 21 10 12 13 3 15
G U J L M C O

Similarly,

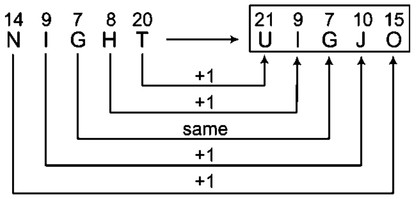

14 1 20 21 18 1 12
N A T U R A L
18 1 12 21 14 1 20
R A L U N A T
+2 +2 +2 +2 +2 +2
20 3 14 21 16 3 22
T C N U P C V

∴ NATURAL ⇒ TCNUPCV

35. (*a*) As,

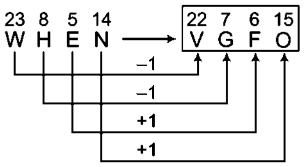

7 18 5 1 20
G R E A T
21 2 5 19 8
U B E S H
+1
+1
same
+1
+1

Similarly,

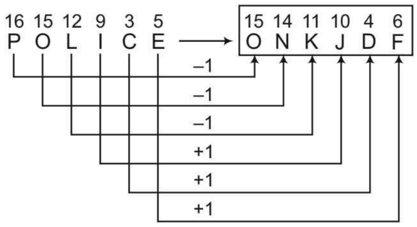

14 9 7 8 20
N I G H T
21 9 7 10 15
U I G J O
+1
+1
same
+1
+1

∴ NIGHT ⇒ UIGJO

36. (*b*) As,

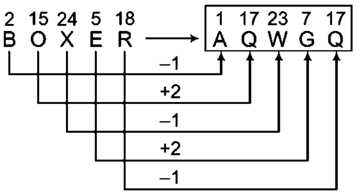

23 8 5 14
W H E N
22 7 6 15
V G F O
–1
–1
+1
+1

Similarly,

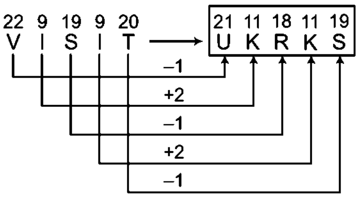

16 15 12 9 3 5
P O L I C E
15 14 11 10 4 6
O N K J D F
–1
–1
–1
+1
+1
+1

∴ POLICE ⇒ ONKJDF

37. (*b*) As,

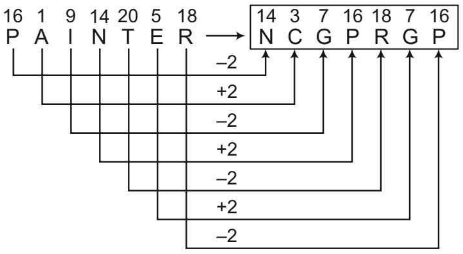

2 15 24 5 18
B O X E R
1 17 23 7 17
A Q W G Q
–1
+2
–1
+2
–1

Similarly,

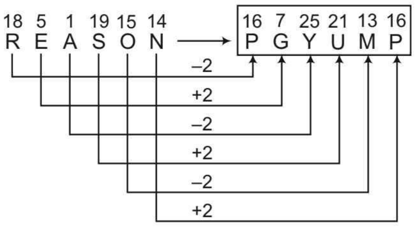

22 9 19 9 20
V I S I T
21 11 18 11 19
U K R K S
–1
+2
–1
+2
–1

∴ VISIT ⇒ UKRKS

38. (*c*) As,

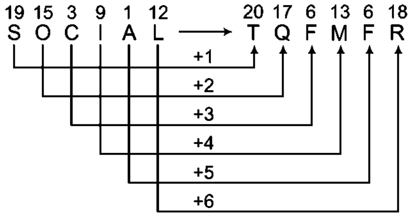

16 1 9 14 20 5 18
P A I N T E R
14 3 7 16 18 7 16
N C G P R G P
–2
+2
–2
+2
–2
+2
–2

Similarly,

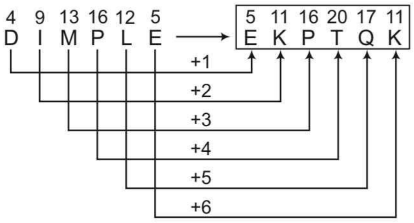

18 5 1 19 15 14
R E A S O N
16 7 25 21 13 16
P G Y U M P
–2
+2
–2
+2
–2
+2

∴ REASON ⇒ PGYUMP

39. (*a*) As,

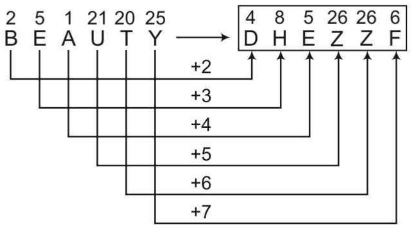

19 15 3 9 1 12
S O C I A L
20 17 6 13 6 18
T Q F M F R
+1
+2
+3
+4
+5
+6

Similarly,

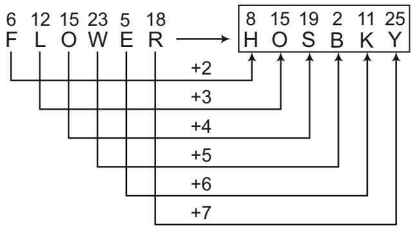

4 9 13 16 12 5
D I M P L E
5 11 16 20 17 11
E K P T Q K
+1
+2
+3
+4
+5
+6

∴ DIMPLE ⇒ EKPTQK

40. (*c*) As,

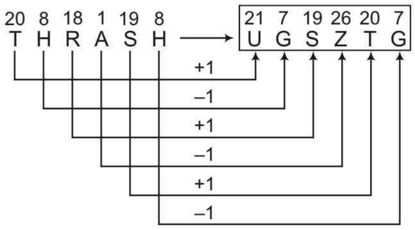

2 5 1 21 20 25
B E A U T Y
4 8 5 26 26 6
D H E Z Z F
+2
+3
+4
+5
+6
+7

Similarly,

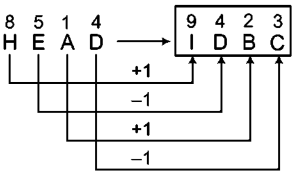

6 12 15 23 5 18
F L O W E R
8 15 19 2 11 25
H O S B K Y
+2
+3
+4
+5
+6
+7

∴ FLOWER ⇒ HOSBKY

41. (*c*) As,

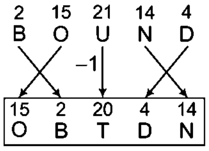

20 8 18 1 19 8
T H R A S H
21 7 19 26 20 7
U G S Z T G
+1
–1
+1
–1
+1
–1

Similarly,

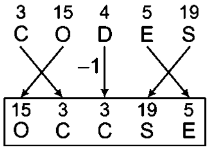

8 5 1 4
H E A D
9 4 2 3
I D B C
+1
–1
+1
–1

∴ HEAD ⇒ IDBC

42. (*c*) As,

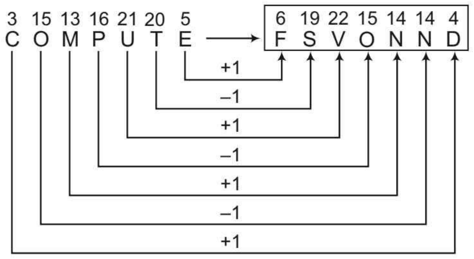

2 15 21 14 4
B O U N D
–1
15 2 20 4 14
O B T D N

Similarly,

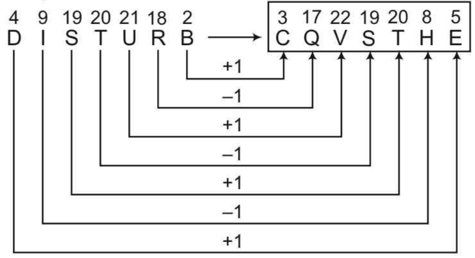

3 15 4 5 19
C O D E S
–1
15 3 3 19 5
O C C S E

∴ CODES ⇒ OCCSE

43. (*b*) As,

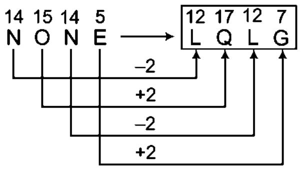

3 15 13 16 21 20 5
C O M P U T E
6 19 22 15 14 14 4
F S V O N N D
+1
–1
+1
–1
+1
–1
+1

Similarly,

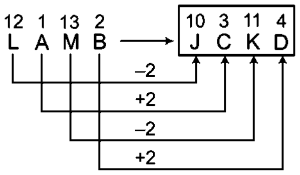

4 9 19 20 21 18 2
D I S T U R B
3 17 22 19 20 8 5
C Q V S T H E
+1
–1
+1
–1
+1
–1
+1

∴ DISTURB ⇒ CQVSTHE

44. (*a*) As,

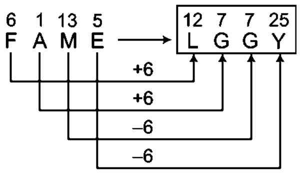

14 15 14 5
N O N E
12 17 12 7
L Q L G
–2
+2
–2
+2

Similarly,

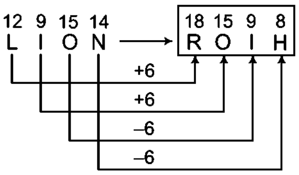

12 1 13 2
L A M B
10 3 11 4
J C K D
–2
+2
–2
+2

∴ LAMB ⇒ JCKD

45. (*b*) As,

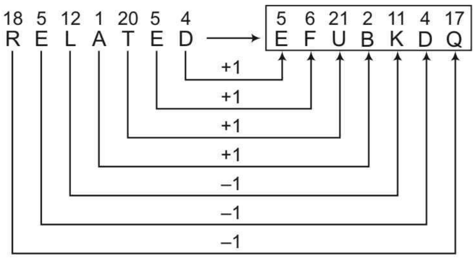

6 1 13 5
F A M E
12 7 7 25
L G G Y
+6
+6
–6
–6

Similarly,

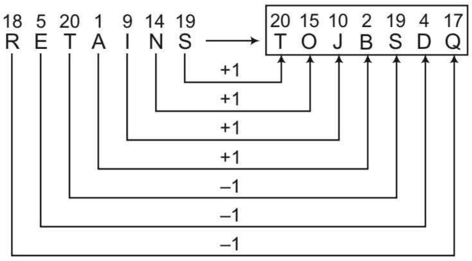

12 9 15 14
L I O N
18 15 9 8
R O I H
+6
+6
–6
–6

∴ LION ⇒ ROIH

46. (*d*) As,

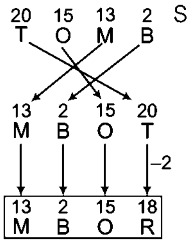

18 5 12 1 20 5 4
R E L A T E D
5 6 21 2 11 4 17
E F U B K D Q
+1
+1
+1
+1
–1
–1
–1

Similarly,

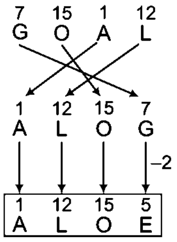

18 5 20 1 9 14 19
R E T A I N S
20 15 10 2 19 4 17
T O J B S D Q
+1
+1
+1
+1
–1
–1
–1

∴ RETAINS ⇒ TOJBSDQ

47. (*b*) As,

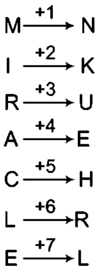

20 15 13 2
T O M B
13 2 15 20
M B O T
–2
13 2 15 18
M B O R

Similarly,

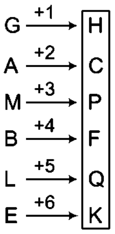

7 15 1 12
G O A L
1 12 15 7
A L O G
–2
1 12 15 5
A L O E

∴ GOAL ⇒ ALOE

48. (*c*) As,

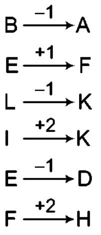

M +1 N
I +2 K
R +3 U
A +4 E
C +5 H
L +6 R
E +7 L

Similarly,

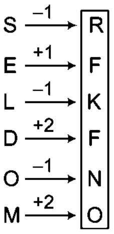

G +1 H
A +2 C
M +3 P
B +4 F
L +5 Q
E +6 K

∴ GAMBLE ⇒ HCPFQK

49. (*c*) As,

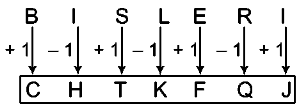

B –1 A
E +1 F
L –1 K
I +2 K
E –1 D
F +2 H

Similarly,

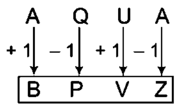

S –1 R
E +1 F
L –1 K
D +2 F
O –1 N
M +2 O

∴ SELDOM ⇒ RFKFNO

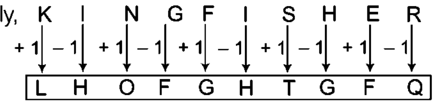
50. (*a*) As,


B I S L E R I
+ 1 – 1 + 1 – 1 + 1 – 1 + 1
C H T K F Q J

and

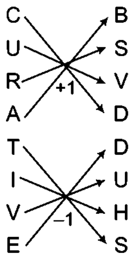

A Q U A
+ 1 – 1 + 1 – 1
B P V Z

Similarly,

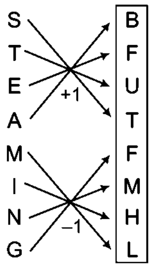

K I N G F I S H E R
+ 1 – 1 + 1 – 1 + 1 – 1 + 1 – 1 + 1 – 1
L H O F G H T G F Q

∴ KINGFISHER ⇒ LHOFGHTGFQ

51. (*a*) As,



Similarly,



∴ STEAMING ⇒ BFUTFMHL

52. (*b*) As,

$M \xrightarrow{+3} P$
$O \xrightarrow{+3} R$
$U \longrightarrow U$
$S \xrightarrow{-2} Q$
$E \xrightarrow{-2} C$

Similarly,

$S \xrightarrow{+3} V$
$H \xrightarrow{+3} K$
$I \longrightarrow I$
$F \xrightarrow{-2} D$
$T \xrightarrow{-2} R$

∴ SHIFT ⇒ VKIDR

53. (*a*) As,

$$\begin{array}{ccccc} L & O & F & T & Y \\ \downarrow{\scriptstyle +0} & \downarrow{\scriptstyle +1} & \downarrow{\scriptstyle +0} & \downarrow{\scriptstyle +1} & \downarrow{\scriptstyle -0} \\ L & P & F & U & Y \end{array}$$

Similarly,

$$\begin{array}{ccccc} D & W & A & R & F \\ \downarrow{\scriptstyle +0} & \downarrow{\scriptstyle +1} & \downarrow{\scriptstyle +0} & \downarrow{\scriptstyle +1} & \downarrow{\scriptstyle +0} \\ D & X & A & S & F \end{array}$$

∴ DWARF ⇒ DXASF

54. (*b*) As,

$$\begin{array}{ccccc} P & R & I & S & M \\ \downarrow{\scriptstyle -1} & \downarrow{\scriptstyle +1} & \downarrow{\scriptstyle -1} & \downarrow{\scriptstyle +1} & \downarrow{\scriptstyle -1} \\ O & S & H & T & L \end{array}$$

and

$$\begin{array}{ccccc} R & U & B & L & E \\ \downarrow{\scriptstyle -1} & \downarrow{\scriptstyle +1} & \downarrow{\scriptstyle -1} & \downarrow{\scriptstyle +1} & \downarrow{\scriptstyle -1} \\ Q & V & A & M & D \end{array}$$

Similarly,

$$\begin{array}{ccccc} W & H & O & R & L \\ \downarrow{\scriptstyle -1} & \downarrow{\scriptstyle +1} & \downarrow{\scriptstyle -1} & \downarrow{\scriptstyle +1} & \downarrow{\scriptstyle -1} \\ V & I & N & S & K \end{array}$$

∴ WHORL ⇒ VINSK

55. (*a*) As,

$$\begin{array}{ccccccc} H & O & N & E & S & T & Y \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ A & B & C & X & Z & D & Q \end{array}$$

Similarly,

$$\begin{array}{cccc} T & O & N & Y \\ \downarrow & \downarrow & \downarrow & \downarrow \\ D & B & C & Q \end{array}$$

∴ TONY ⇒ DBCQ

56. (*d*) As,

$$\begin{array}{ccccccccccc} T & E & M & P & E & R & A & T & U & R & E \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ B & Z & Q & D & Y & X & V & B & N & X & Z \end{array}$$

Similarly,

$$\begin{array}{cccc} R & A & M & P \\ \downarrow & \downarrow & \downarrow & \downarrow \\ X & V & Q & D \end{array}$$

∴ RAMP ⇒ XVQD

57. (*a*) As,

$$\begin{array}{ccccccccc} B & E & A & U & T & I & F & U & L \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ C & D & O & G & H & J & K & M & N \end{array}$$

Similarly,

$$\begin{array}{cccc} L & E & A & F \\ \downarrow & \downarrow & \downarrow & \downarrow \\ N & D & O & K \end{array}$$

∴ LEAF ⇒ NDOK

58. (*b*) As,

$$\begin{array}{cccccc} S & I & N & G & E & R \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ A & I & B & C & E & D \end{array}$$

Similarly,

$$\begin{array}{cccccc} G & I & N & G & E & R \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ C & I & B & C & E & D \end{array}$$

∴ GINGER ⇒ CIBCED

59. (*b*) As,

$$\begin{array}{cccc} S & T & A & G \\ \downarrow & \downarrow & \downarrow & \downarrow \\ H & G & Z & T \end{array}$$

and

$$\begin{array}{cccc} H & O & R & N \\ \downarrow & \downarrow & \downarrow & \downarrow \\ S & L & I & M \end{array}$$

Similarly,

$$\begin{array}{ccccc} N & O & R & T & H \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ M & L & I & G & S \end{array}$$

∴ NORTH ⇒ MLIGS

60. (*c*) As,

$$\begin{array}{ccc} P & E & N \\ \downarrow & \downarrow & \downarrow \\ N & Z & O \end{array}$$

and

$$\begin{array}{cccc} B & A & R & K \\ \downarrow & \downarrow & \downarrow & \downarrow \\ C & T & S & L \end{array}$$

Similarly,

$$\begin{array}{ccccc} P & R & A & N & K \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ N & S & T & O & L \end{array}$$

∴ PRANK ⇒ NSTOL

61. (*a*) As,

$$\begin{array}{ccccc} C & O & U & L & D \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ B & N & T & K & C \end{array}$$

and

$$\begin{array}{cccccc} M & A & R & G & I & N \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ L & Z & Q & F & H & M \end{array}$$

Similarly,

$$\begin{array}{cccccccc} M & O & U & L & D & I & N & G \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ L & N & T & K & C & H & M & F \end{array}$$

∴ MOULDING ⇒ LNTKCHMF

62. (*d*) As,

$$\begin{array}{cccccc} P & A & R & E & N & T \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ B & D & F & G & J & K \end{array}$$

and

$$\begin{array}{cccccccc} C & H & I & L & D & R & E & N \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ M & O & X & Q & U & F & G & J \end{array}$$

∴ REPRINT ⇒ FGBFXJK

63. (*b*) As,

$$\begin{array}{cccccccccc} T & A & B & L & E & C & L & O & T & H \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ X & E & M & R & A & N & R & I & X & T \end{array}$$

Similarly,

$$\begin{array}{ccccc} H & O & T & E & L \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ T & I & X & A & R \end{array}$$

∴ HOTEL ⇒ TIXAR

64. (*c*) As,
$$\begin{array}{cccc} J & \boxed{U} & N & \boxed{E}\\ \downarrow&\downarrow&\downarrow&\downarrow\\ P&\boxed{Q}&R&\boxed{S}\end{array}$$

and
$$\begin{array}{cccccc} A & U & \boxed{G} & \boxed{U} & \boxed{S} & \boxed{T}\\ \downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\ W&Q&\boxed{F}&\boxed{Q}&\boxed{M}&\boxed{N}\end{array}$$

Similarly,
$$\begin{array}{ccccc} G & U & E & S & T\\ \downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\ \hline \multicolumn{1}{|c}{F}&Q&S&M&\multicolumn{1}{c|}{N}\\ \hline\end{array}$$

∴ GUEST ⇒ FQSMN

65. (*d*) As,
E → Q
A → P
R → M
T → Z
H → S

and
H → $\boxed{S}$
E → $\boxed{Q}$
A → $\boxed{P}$
R → $\boxed{M}$
T → $\boxed{Z}$

∴ HEART ⇒ SQPMZ

66. (*a*) As,
$\boxed{A \to M}$
$\boxed{N \to S}$
$\boxed{U \to N}$

and
$\boxed{V \to P}$
$\boxed{I \to L}$
N → S
A → M
Y → Z

Similarly,
A → $\boxed{M}$
N → $\boxed{S}$
U → $\boxed{N}$
V → $\boxed{P}$
I → $\boxed{L}$

∴ ANUVI ⇒ MSNPL

67. (*d*) As,
A → P
P → Q
P → Q
L → R
$\boxed{E \to S}$

$\boxed{R \to A}$
I → B
$\boxed{S \to C}$

and
M → T
A → P
N → X
G → Y
$\boxed{O \to Z}$

Similarly,
R → $\boxed{A}$
O → $\boxed{Z}$
S → $\boxed{C}$
E → $\boxed{S}$

∴ ROSE ⇒ AZCS

68. (*a*) As,
P → F
R → L
$\boxed{I \to O}$
$\boxed{N \to W}$
$\boxed{C \to E}$
E → R

and
P → F
$\boxed{R \to L}$
$\boxed{I \to O}$
N → W
C → E
E → R
$\boxed{S \to S}$
$\boxed{S \to S}$

Similarly,
S → $\boxed{S}$
L → $\boxed{R}$
O → $\boxed{I}$
W → $\boxed{N}$
E → $\boxed{C}$
R → $\boxed{E}$
S → $\boxed{S}$

∴ SLOWERS ⇒ SRINCES

69. (*c*) As,
O → C
$\boxed{R \to B}$
G → D
$\boxed{A \to W}$
$\boxed{N \to L}$
I → Q
$\boxed{S \to J}$
A → W
$\boxed{T \to Y}$
$\boxed{I \to Q}$
$\boxed{O \to C}$
$\boxed{N \to L}$

and
O → C
$\boxed{P \to X}$
$\boxed{E \to F}$
R → B
$\boxed{A \to W}$
T → Y
I → Q
O → C
N → L

Similarly,
S → $\boxed{J}$
E → $\boxed{F}$
P → $\boxed{X}$
A → $\boxed{W}$
R → $\boxed{B}$
A → $\boxed{W}$
T → $\boxed{Y}$
I → $\boxed{Q}$
O → $\boxed{C}$
N → $\boxed{L}$

∴ SEPARATION ⇒ JFXWBWYQCL

70. (*d*) As,
$\boxed{Z \to P}$
O → O
$\boxed{O \to O}$
$\boxed{M \to N}$

and
R → Q
$\boxed{O \to O}$
A → B
D → E

Similarly,
N → $\boxed{M}$
O → $\boxed{O}$
M → $\boxed{N}$
P → $\boxed{Z}$

∴ NOMP ⇒ MONZ

71. (*b*) As,
F → Q
I → H
$\boxed{R \to O}$
$\boxed{E \to E}$

and
M → Z
$\boxed{O \to M}$
$\boxed{V \to W}$
$\boxed{E \to E}$

Similarly,
O → $\boxed{M}$
V → $\boxed{W}$
E → $\boxed{E}$
R → $\boxed{O}$

∴ OVER ⇒ MWEO

72. (*b*) As,
$\boxed{S \to F}$
$\boxed{T \to N}$
$\boxed{O \to B}$
$\boxed{V \to L}$
$\boxed{E \to K}$

Similarly,
V → $\boxed{L}$
O → $\boxed{B}$
T → $\boxed{N}$
E → $\boxed{K}$
S → $\boxed{F}$

∴ VOTES ⇒ LBNKF

73. (*d*) As,
$$\begin{array}{ccccccc} C & \boxed{E} & \boxed{R} & T & A & \boxed{I} & N\\ \downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\ X&\boxed{V}&\boxed{I}&G&Z&\boxed{R}&M\end{array}$$

and
$$\begin{array}{cccccccc} S & E & \boxed{Q} & \boxed{U} & E & N & C & E\\ \downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\ H&V&\boxed{J}&\boxed{F}&V&M&X&V\end{array}$$

Similarly,
$$\begin{array}{cccccccc} R & E & Q & U & I & R & E & D\\ \downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\ I&V&J&F&R&I&V&W\end{array}$$

∴ REQUIRED ⇒ IVJFRIVW

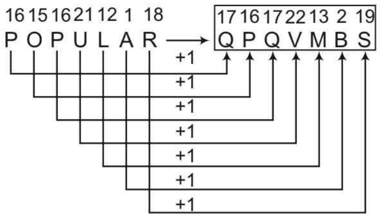
The letters given here are opposite letters to each other.

74. (*b*) As,
$$\begin{array}{ccccc} 23 & 1 & 20 & 5 & 18\\ W & A & T & E & R\\ \downarrow{\scriptstyle +2} & \downarrow{\scriptstyle +2} & \downarrow{\scriptstyle +2} & \downarrow{\scriptstyle +2} & \downarrow{\scriptstyle +2}\\ \hline \multicolumn{1}{|c}{Y} & C & V & G & \multicolumn{1}{c|}{T}\\ \hline 25 & 3 & 22 & 7 & 20\end{array}$$

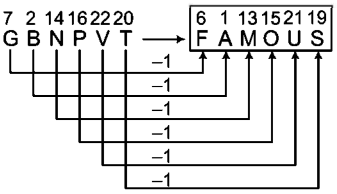
Similarly,
$$\begin{array}{cccc} 6 & 9 & 18 & 5\\ \hline \multicolumn{1}{|c}{F} & I & R & \multicolumn{1}{c|}{E}\\ \hline \uparrow{\scriptstyle -2} & \uparrow{\scriptstyle -2} & \uparrow{\scriptstyle -2} & \uparrow{\scriptstyle -2}\\ H & K & T & G\\ 8 & 11 & 20 & 7\end{array}$$

∴ HKTG ⇒ FIRE

75. (*b*) As,

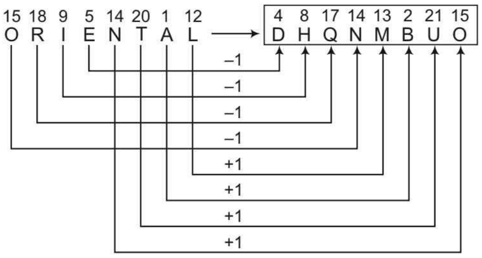

16 15 16 21 12 1 18
P O P U L A R
17 16 17 22 13 2 19
Q P Q V M B S
+1
+1
+1
+1
+1
+1
+1

Similarly,

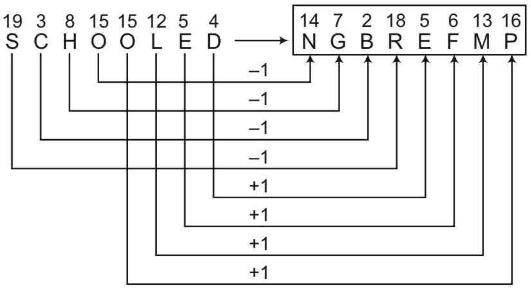

7 2 14 16 22 20
G B N P V T
6 1 13 15 21 19
F A M O U S
–1
–1
–1
–1
–1
–1

∴ GBNPVT ⇒ FAMOUS

76. (*b*) As,

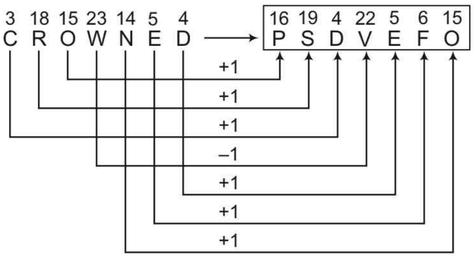

15 18 9 5 14 20 1 12
O R I E N T A L
4 8 17 14 13 2 21 15
D H Q N M B U O
–1
–1
–1
–1
+1
+1
+1
+1

Similarly,

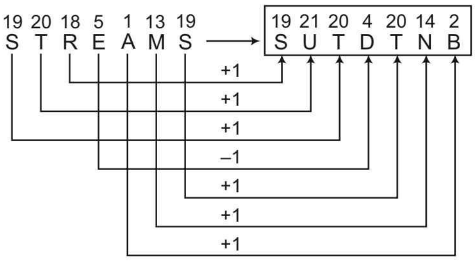

19 3 8 15 15 12 5 4
S C H O O L E D
14 7 2 18 5 6 13 16
N G B R E F M P
–1
–1
–1
–1
+1
+1
+1
+1

∴ SCHOOLED ⇒ NGBREFMP

77. (*c*) As,

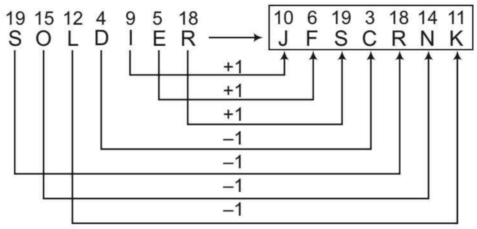

3 18 15 23 14 5 4
C R O W N E D
16 19 4 22 5 6 15
P S D V E F O
+1
+1
+1
–1
+1
+1
+1

Similarly,

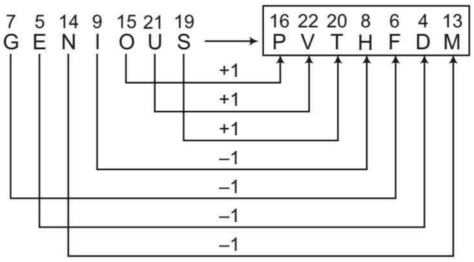

19 20 18 5 1 13 19
S T R E A M S
19 21 20 4 20 14 2
S U T D T N B
+1
+1
+1
–1
+1
+1
+1

∴ STREAMS ⇒ SUTDTNB

78. (*e*) As,

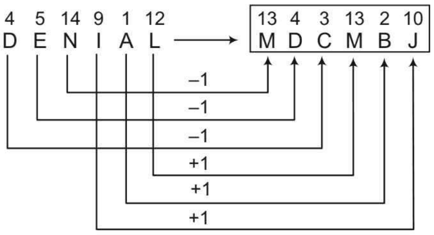

19 15 12 4 9 5 18
S O L D I E R
10 6 19 3 18 14 11
J F S C R N K
+1
+1
+1
–1
–1
–1
–1

Similarly,

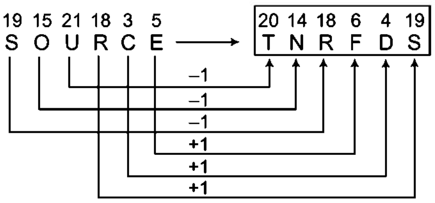

7 5 14 9 15 21 19
G E N I O U S
16 22 20 8 6 4 13
P V T H F D M
+1
+1
+1
–1
–1
–1
–1

∴ GENIOUS ⇒ PVTHFDM

79. (*a*) As,

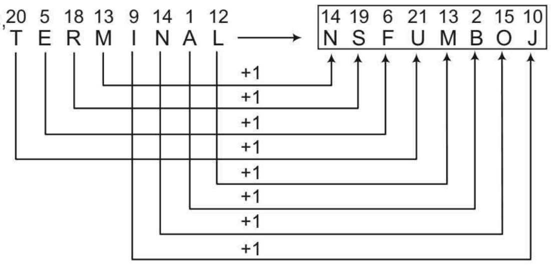

4 5 14 9 1 12
D E N I A L
13 4 3 13 2 10
M D C M B J
–1
–1
–1
+1
+1
+1

Similarly,

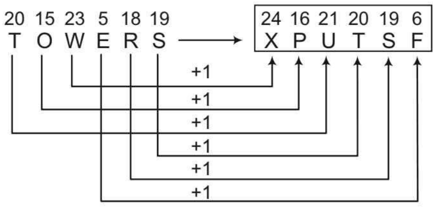

19 15 21 18 3 5
S O U R C E
20 14 18 6 4 19
T N R F D S
–1
–1
–1
+1
+1
+1

∴ SOURCE ⇒ TNRFDS

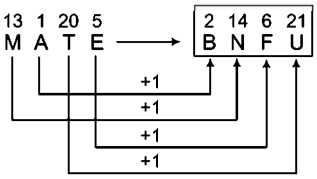
80. (*c*) As,


20 5 18 13 9 14 1 12
T E R M I N A L
14 19 6 21 13 2 15 10
N S F U M B O J
+1
+1
+1
+1
+1
+1
+1
+1

and


20 15 23 5 18 19
T O W E R S
24 16 21 20 19 6
X P U T S F
+1
+1
+1
+1
+1
+1

Similarly,


13 1 20 5
M A T E
2 14 6 21
B N F U
+1
+1
+1
+1

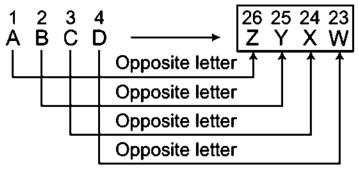
∴ MATE ⇒ BNFU

Type 3 Opposite Letters Coding

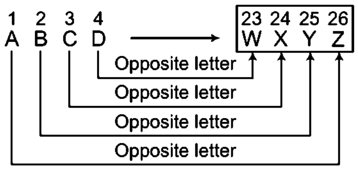
Under this pattern, each letter of a word is coded with its opposite letter.

Let us consider the coding of ABCD which can be done in following ways

(i)


1 2 3 4
A B C D
26 25 24 23
Z Y X W
Opposite letter
Opposite letter
Opposite letter
Opposite letter

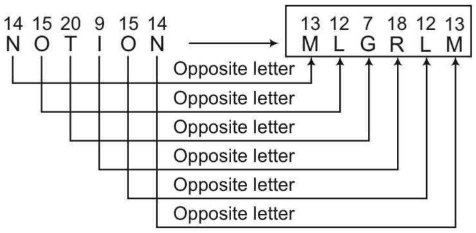
(ii)


1 2 3 4
A B C D
23 24 25 26
W X Y Z
Opposite letter
Opposite letter
Opposite letter
Opposite letter

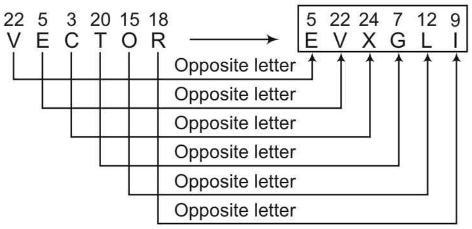
***Ex* 13** If in a certain code language 'NOTION' is written as 'MLGRLM', then how will 'VECTOR' be written in that language?

(a) EVXLGI (b) EVGXIL (c) EVXGIL (d) EVXGLI

Sol. (*d*) As,


14 15 20 9 15 14
N O T I O N
13 12 7 18 12 13
M L G R L M
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

Similarly,


22 5 3 20 15 18
V E C T O R
5 22 24 7 12 9
E V X G L I
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

∴ VECTOR = EVXGLI

Practice Corner 4.3

Build your Confidence...

1. If in a certain code language 'SIMILAR' is written as 'IZORNRH', then how will 'NATURAL' be written in that language?

(a) OZIFGZM (b) OZIFGMZ (c) OZIFZMG (d) OZIFMZG

2. If in a certain code language 'CLUB' is written as 'XOFY', 'NOT' is written as 'MLG', then how will 'PUNCTUAL' be written in that code language?

(a) KFMGXZFO (b) KFMXGZFO (c) KFMXGFZO (d) KFMXGFOZ

3. If in a certain code language 'ARIHANT' is coded as 'ZIRSZMG', 'BIRD' is written as 'YRIW', then how will 'PAINTER' be coded in that language?

(a) KZRMVGI (b) KZRMIGV (c) KZRMGIV (d) KZRMGVI

4. If in a certain code language 'NATURAL' is coded as 'MZGFIZO', then how will 'CARE' be written in that language?

(a) XZIV (b) XZVI
(c) XVZI (d) XIZV

5. If 'CAMERA' is coded as 'ZIVNZX' in a certain code language, then how would you code 'CHAPRA' in that code language?

(a) ZISKZX (b) ZIKSZX (c) ZIKXSZ (d) ZIKZSX

6. If in a certain code language 'NEETA' is written as 'MVVGZ', then what word will be written for 'IZHSNR'?

(a) VANDANA (b) RASHMI
(c) ANJALI (d) POONAM

7. If in a certain code language 'TIGER' is written as 'GRTVI', then what word will be written for 'HMZPV'?

(a) GREAT (b) TRACK (c) PLATE (d) SNAKE

8. In a certain code, 'CLOCK' is written as 'XOLXP'. How will 'LOTUS' be written in that same code?

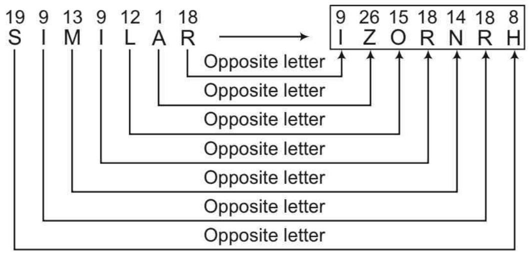
(a) OGLFH (b) OLGFH (c) LOGFH (d) OLGHF

9. In a certain code, 'LATE' is written as 'VGZO'. How will 'SHINE' be written in that same code?

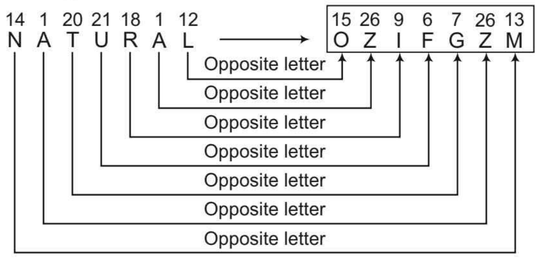
(a) VRMSH (b) VMSHR (c) VMRSH (d) MVRSH

Response & Interpretations (4.3)

1. (*a*) As,

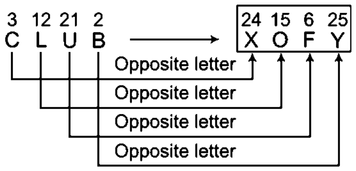

19 9 13 9 12 1 18
S I M I L A R
9 26 15 18 14 18 8
I Z O R N R H
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

Similarly,

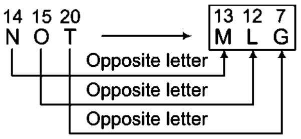

14 1 20 21 18 1 12
N A T U R A L
15 26 9 6 7 26 13
O Z I F G Z M
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

∴ NATURAL ⇒ OZIFGZM

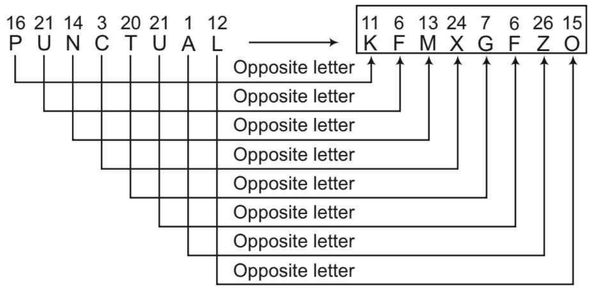
2. (*c*) As,


3 12 21 2
C L U B
24 15 6 25
X O F Y
Opposite letter
Opposite letter
Opposite letter
Opposite letter

and

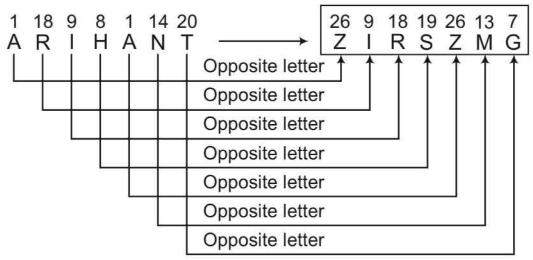

14 15 20
N O T
13 12 7
M L G
Opposite letter
Opposite letter
Opposite letter

Similarly,

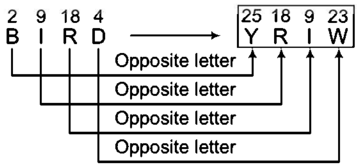

16 21 14 3 20 21 1 12
P U N C T U A L
11 6 13 24 7 6 26 15
K F M X G F Z O
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

∴ PUNCTUAL ⇒ KFMXGFZO

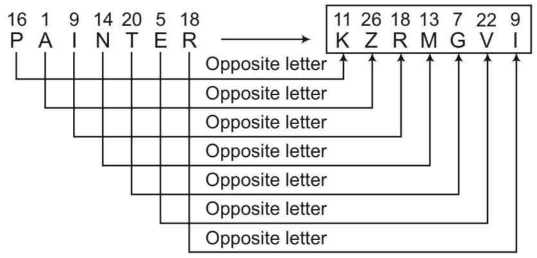
3. (*a*) As,


1 18 9 8 1 14 20
A R I H A N T
26 9 18 19 26 13 7
Z I R S Z M G
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

and

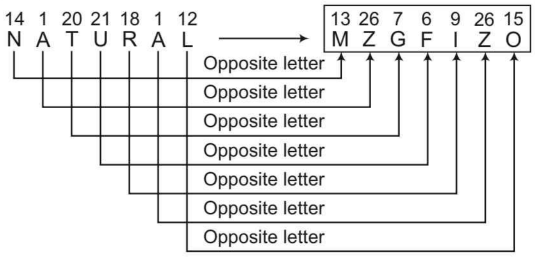

2 9 18 4
B I R D
25 18 9 23
Y R I W
Opposite letter
Opposite letter
Opposite letter
Opposite letter

Similarly,

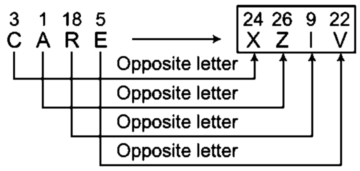

16 1 9 14 20 5 18
P A I N T E R
11 26 18 13 7 22 9
K Z R M G V I
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

∴ PAINTER ⇒ KZRMGVI

4. (*a*) As,

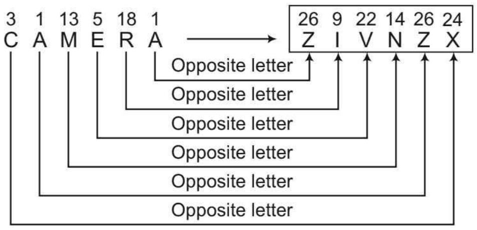

14 1 20 21 18 1 12
N A T U R A L
13 26 7 6 9 26 15
M Z G F I Z O
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

Similarly,

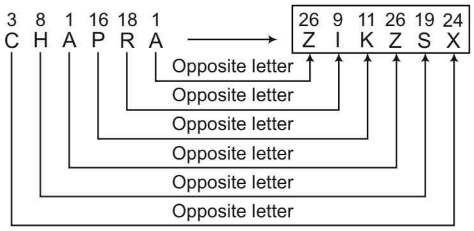

3 1 18 5
C A R E
24 26 9 22
X Z I V
Opposite letter
Opposite letter
Opposite letter
Opposite letter

∴ CARE ⇒ XZIV

5. (*d*) As,

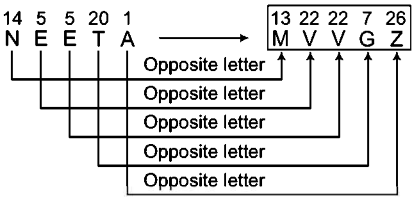

3 1 13 5 18 1
C A M E R A
26 9 22 14 26 24
Z I V N Z X
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

Similarly,

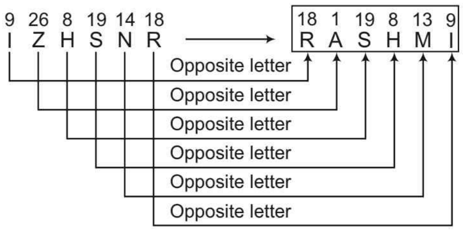

3 8 1 16 18 1
C H A P R A
26 9 11 26 19 24
Z I K Z S X
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

∴ CHAPRA ⇒ ZIKZSX

6. (*b*) As,

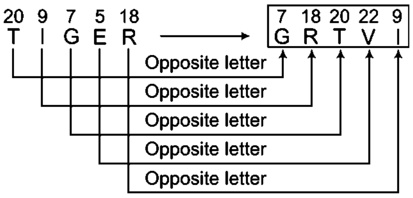

14 5 5 20 1
N E E T A
13 22 22 7 26
M V V G Z
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

Similarly,

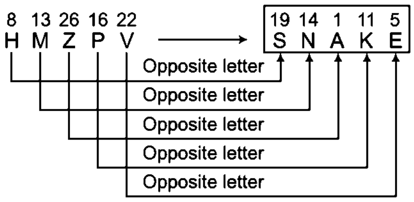

9 26 8 19 14 18
I Z H S N R
18 1 19 8 13 9
R A S H M I
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

∴ IZHSNR ⇒ RASHMI

7. (*d*) As,

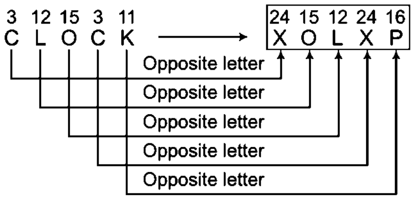

20 9 7 5 18
T I G E R
7 18 20 22 9
G R T V I
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

Similarly,

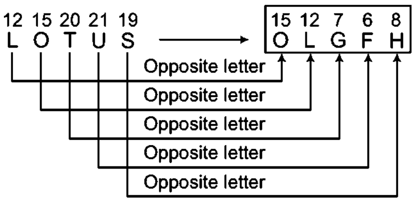

8 13 26 16 22
H M Z P V
19 14 1 11 5
S N A K E
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

∴ HMZPV ⇒ SNAKE

8. (*b*) As,

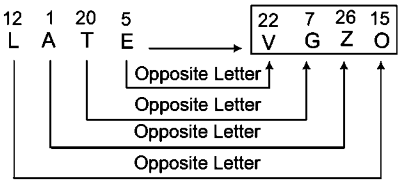

3 12 15 3 11
C L O C K
24 15 12 24 16
X O L X P
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

Similarly,

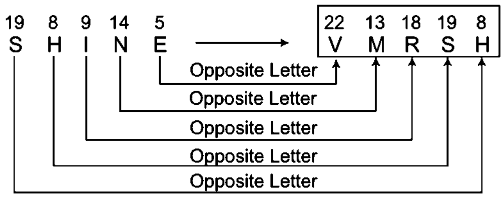

12 15 20 21 19
L O T U S
15 12 7 6 8
O L G F H
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

∴ LOTUS ⇒ OLGFH

9. (*c*) As,


12 1 20 5
L A T E
22 7 26 15
V G Z O
Opposite Letter
Opposite Letter
Opposite Letter
Opposite Letter

Similarly,

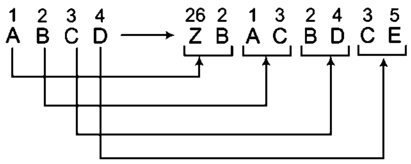

19 8 9 14 5
S H I N E
22 13 18 19 8
V M R S H
Opposite Letter
Opposite Letter
Opposite Letter
Opposite Letter
Opposite Letter

∴ SHINE ⇒ VMRSH

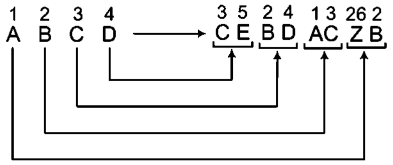
Type 4 Coding of Letters by Their Left and Right Letters

Under this pattern each letter of a letter group/word is coded by its left and right letters of English alphabet.
Let us consider the coding of ABCD

(i)



(ii)

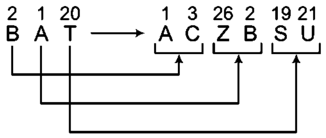


Ex **14** If in a certain code language 'BAT' is written as 'ACZBSU', then how will 'SIX' be written in that code?

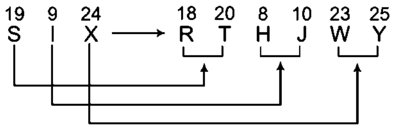
(a) RTHJYW (b) RHTJYW (c) RTHWJY (d) RTHJWY

Sol. (*d*) Here, each letter is coded by its left and right letters.

As,



Similarly,



∴ SIX = RTHJWY

Practice Corner **4.4**

Build your Confidence...

1. If in a certain code language 'GO' is written as 'FHNP', then how will 'SUN' be written in that language?

(a) RTTOMV (b) RTTOVM (c) RTTVOM (d) RTTVMO

2. If in a certain code language 'LAP' is coded as 'KMZBOQ', then how will 'NOTE' be written in that language?

[Syndicate Bank (Clerk) 2011]

(a) MONPSUFD (b) MONPUSDF
(c) MNOPSUDF (d) MONPSUDF
(e) None of these

3. If in a certain code language 'TOP' is written as 'OQNPSU', 'RAT' is written as 'SUZBQS', then how will 'GUN' be coded in that language?

(a) MTOHFV (b) MOTHFV
(c) MOTVHF (d) MOTVFH

4. If in a certain code language 'RAM' is written as 'QSZBLN', 'LOVE' is written as 'KMNPUWDF', then how will 'ACT' be written in that language?

(a) ZBBDSU (b) ZBBDUS
(c) ZBDBSU (d) ZDSUBB

5. If in a certain code language 'NAME' is written as 'MOZBLNDF', 'PUN' is written as 'OQTVMO', then how will 'TALK' be coded in that language?

(a) SUZBKMJL (b) SUZBKMLT
(c) SUZKBMLT (d) SUZKBIML

6. If in a certain language 'NIL' is written as 'MOHJKM', then how will 'COMB' be written in that language?

(a) BDNPLNAC (b) BDNPLNCA
(c) BDNPNLCA (d) BDPNLNAC

7. If in a certain code language 'PICK' is coded as 'OQHJBDJL', then how will 'FLAT' be written in that language?

(a) EGKMZBSU (b) EGKMZBUS
(c) EGKMBZSU (d) EKGMZBSU

8. In a certain code language 'CHAT' is written as 'SUZBGIBD'. How will 'APT' be coded in that language?

(a) SUOBZQ (b) SUOZQB
(c) SUOQBZ (d) SUOQZB

9. In a certain code language 'PINKY' is coded as 'XZJLMOHJOQ'. How will 'VANDY' be coded in that language?

(a) XZCEMOZBUW
(b) XZCEMOZBWU
(c) XZECMOBZUW
(d) ZXCEMOZBWU

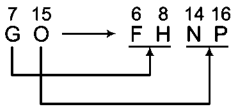
10. If in a certain code language 'TRUE' is coded as 'USSQVTFD', then what is the code for 'PRAY' in the same language?

(a) QSOQBZXZ (b) QOSQBZXZ
(c) QOSQBZZX (d) QOSBQZZX

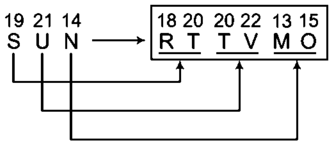
Response & Interpretations (4.4)

1. (*d*) Each letter is coded with its left and right letters in English alphabet.

As,


7 15
G O
6 8 14 16
F H N P

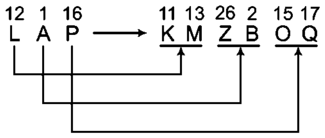
Similarly,


19 21 14
S U N
18 20 20 22 13 15
R T T V M O

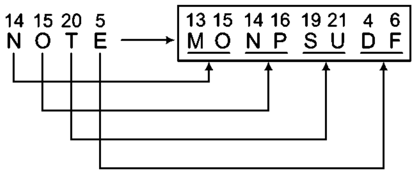
∴ SUN ⇒ RTTVMO

2. (*d*) Each letter is coded with its left and right letters in English alphabet.

As,


12 1 16
L A P
11 13 26 2 15 17
K M Z B O Q

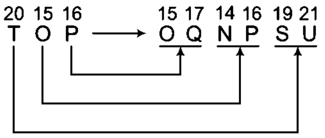
Similarly,


14 15 20 5
N O T E
13 15 14 16 19 21 4 6
M O N P S U D F

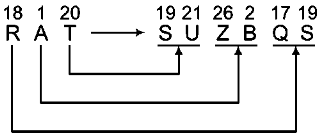
∴ NOTE ⇒ MONPSUDF

3. (*d*) Starting from right end, each letter is coded with its left and right letters of English alphabet.

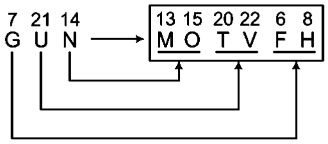
As,


20 15 16
T O P
15 17 14 16 19 21
O Q N P S U

and


18 1 20
R A T
19 21 26 2 17 19
S U Z B Q S

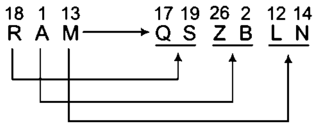
Similarly,


7 21 14
G U N
13 15 20 22 6 8
M O T V F H

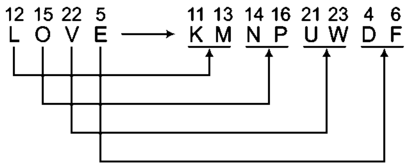
∴ GUN ⇒ MOTVFH

4. (*a*) Each letter is coded with its left and right letters in English alphabet.

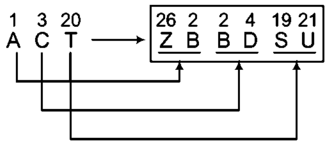
As,


18 1 13
R A M
17 19 26 2 12 14
Q S Z B L N

and


12 15 22 5
L O V E
11 13 14 16 21 23 4 6
K M N P U W D F

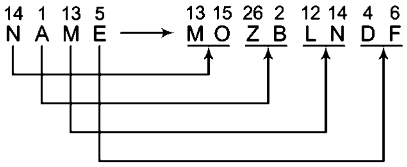
Similarly,


1 3 20
A C T
26 2 2 4 19 21
Z B B D S U

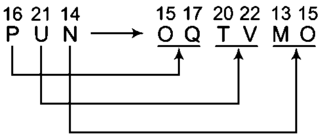
∴ ACT ⇒ ZBBDSU

5. (*a*) Each letter is coded with its left and right letters of English alphabet.

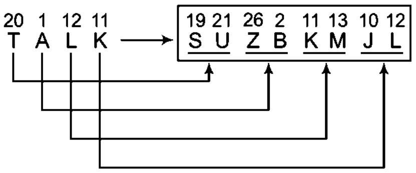
As,


14 1 13 5
N A M E
13 15 26 2 12 14 4 6
M O Z B L N D F

and


16 21 14
P U N
15 17 20 22 13 15
O Q T V M O

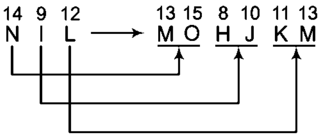
Similarly,


20 1 12 11
T A L K
19 21 26 2 11 13 10 12
S U Z B K M J L

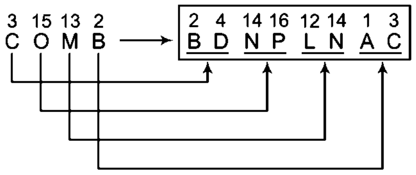
∴ TALK ⇒ SUZBKMJL

6. (*a*) Each letter is coded with its left and right letters in English alphabet.

As,


14 9 12
N I L
13 15 8 10 11 13
M O H J K M

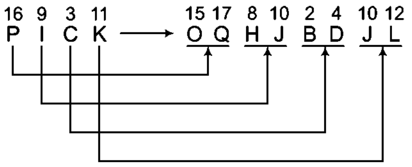
Similarly,


3 15 13 2
C O M B
2 4 14 16 12 14 1 3
B D N P L N A C

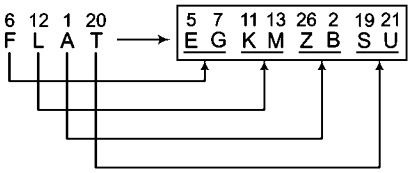
∴ COMB ⇒ BDNPLNAC

7. (*a*) Each letter is coded with its left and right letters in English alphabet.

As,


16 9 3 11
P I C K
15 17 8 10 2 4 10 12
O Q H J B D J L

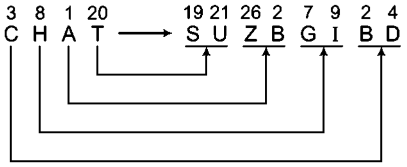
Similarly,


6 12 1 20
F L A T
5 7 11 13 26 2 19 21
E G K M Z B S U

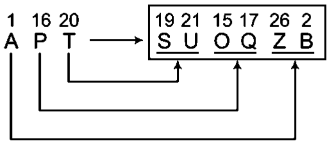
∴ FLAT ⇒ EGKMZBSU

8. (*d*) Starting from right end, each letter is coded with its left and right letters in English alphabet.

As,


3 8 1 20
C H A T
19 21 26 2 7 9 2 4
S U Z B G I B D

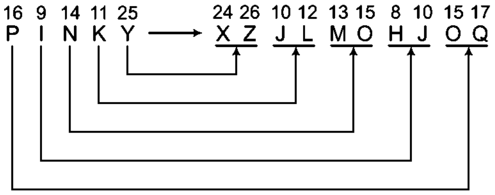
Similarly,


1 16 20
A P T
19 21 15 17 26 2
S U O Q Z B

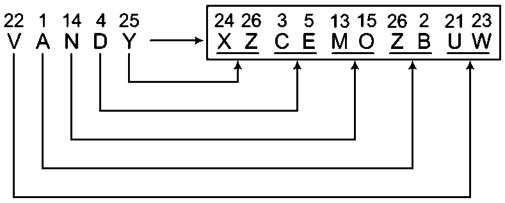
∴ APT ⇒ SUOQZB

9. (*a*) Starting from right end, each letter is coded with its left and right letters in English alphabet.

As,


16 9 14 11 25
P I N K Y
24 26 10 12 13 15 8 10 15 17
X Z J L M O H J O Q

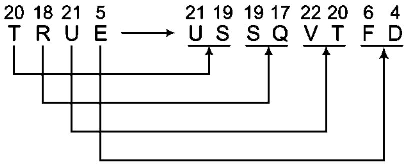
Similarly,


22 1 14 4 25
V A N D Y
24 26 3 5 13 15 26 2 21 23
X Z C E M O Z B U W

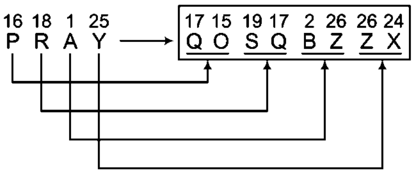
∴ VANDY ⇒ XZCEMOZBUW

10. (*c*) Each letter is coded with its right and left letters respectively in English alphabet.

As,


20 18 21 5
T R U E
21 19 19 17 22 20 6 4
U S S Q V T F D

Similarly,


16 18 1 25
P R A Y
17 15 19 17 2 26 26 24
Q O S Q B Z Z X

∴ PRAY ⇒ QOSQBZZX

Type 5 Number Coding

In number coding, numerical code is assigned to the word or the alphabetical letters and candidates are required to analyse the codes as per the correlation between these numbers and letters. This correlation is based on certain pattern according to the position of letters in English alphabet as per a set of given rules.

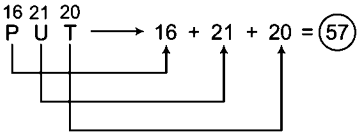
Following example will give you a better idea about the type of question asked

***Ex* 15** If in a certain code language 'PUT' is written as '57', then how will 'BAT' be written in that language?

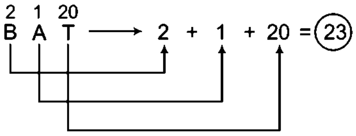
(a) 25 (b) 60 (c) 55 (d) 23

Sol. (*d*) Here, forward order letter positions are added

As,


16 21 20
P U T
16 + 21 + 20 = 57

Similarly,


2 1 20
B A T
2 + 1 + 20 = 23

∴ BAT = 23

***Ex* 16** If B = 2 and BAG = 10, then BOX = ?

[SSC (10+2) 2013]

(a) 36 (b) 39 (c) 41 (d) 52

Sol. (c) As, B = 2

and BAG = 2 + 1 + 7 = 10

Similarly, BOX = 2 + 15 + 24 = 41

***Ex* 17** If PKROK is coded as 72962 and KRRPK as 29972, then how can NJMLZ be coded?

[SSC (CGL) April 2014]

(a) 45176 (b) 74314 (c) 91592 (d) 51430

Sol. (*d*) According to the given code system, P is coded as 7, K as 2, R as 9 and O as 6 that means code of NJMLZ does not have either 7, 2, 9 or 6. Hence, required code will be 51430, which is given in option (d).

***Ex* 18** If 'GLOSSORY' is coded as '97533562' and 'GEOGRAPHY' is coded as '915968402', then 'GEOLOGY' can be coded as

[SSC (10+2) 2013]

(a) 9156927 (b) 9157592 (c) 9057592 (d) 9157591

Sol. (*b*) As,

$$\begin{array}{cccccccc} G & \boxed{L} & O & S & S & O & R & \boxed{Y} \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 9 & \boxed{7} & 5 & 3 & 3 & 5 & 6 & \boxed{2} \end{array}$$

and

$$\begin{array}{ccccccccc} \boxed{G} & \boxed{E} & \boxed{O} & G & R & A & P & H & Y \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{9} & \boxed{1} & \boxed{5} & 9 & 6 & 8 & 4 & 0 & 2 \end{array}$$

Similarly,

$$\begin{array}{ccccccc} G & E & O & L & O & G & Y \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \end{array}$$
$$\boxed{9\ 1\ 5\ 7\ 5\ 9\ 2}$$

Practice Corner **4.5**

Build your Confidence...

1. If in a certain code language 'RAMAN' is coded as '18113114', then how will 'KAPILA' be coded in that language?

(a) 111196112 (b) 111169112
(c) 111169121 (d) 116119121

2. If in a certain code language 'BHAI' is written as '2819', then how will 'CDGH' be written in that language?

(a) 8437 (b) 7348 (c) 3487 (d) 3478

3. If in a certain code language 'HIGH' is written as '8978', then how will 'DEAF' be written in that language?

[UP PCS 2004]

(a) 5416 (b) 4516 (c) 4561 (d) 4156

4. If in a certain code language 'HACB' is written as '8132', then how will 'DEFA' be written in that language?

[SSC (CPO) 2008]

(a) 4651 (b) 4561 (c) 4156 (d) 5641

5. If in a certain code language 'PAPER' is written as '16116518', then how will 'BRINJL' be written in that language?

(a) 2189141012 (b) 2189141021
(c) 23189140112 (d) 2389411021

6. If in a certain code language 'RUN' is written as '182114' and 'PEN' is written as '16514', then how will 'RANSOM' be coded in that language?

(a) 1841491315 (b) 18114131915
(c) 18114191315 (d) 18114191513

7. If 'GERMANY' is written as '7, 5, 18, 13, 1, 14, 25', how can 'FRANCE' be written in that code? **[SSC (Steno) 2012]**

(a) 6, 18, 1, 14, 3, 5 (b) 6, 3, 18, 14, 1, 5
(c) 8, 2, 14, 5, 13, 6 (d) 8, 16, 14, 3, 1, 5

8. If in a certain code language 'WIND' is written as '414923', 'SAND' is written as '414119', then how will 'FASHION' be written in that language?

(a) 1451981916 (b) 1415989161
(c) 1415981961 (d) 1415981916

9. If 7 is coded as CBRT343, then 9 is coded as **[SNAP 2013]**

(a) CBRT27 (b) SQRT81 (c) CBRT729 (d) CBRT6561

10. If in a certain code language 'SSC' is written as '19193', then how will 'BBC' be written in that language?

[SSC (CPO) 2012]

(a) 113 (b) 221
(c) 223 (d) 213

11. If 'HELLO' is coded as 15 | 12 | 12 | 5 | 8, then 'WHERE' is Codes as **[SNAP 2013]**

(a) 16|13|13|6|9 (b) 5|18|5|8|23
(c) 5|5|18|23|8 (d) 5|5|18|8|23

12. If 'PAINT' is coded as '74128' and 'EXCEL' is coded as '93596', how is 'ACCEPT' coded? **[SSC (CGL) 2013]**

(a) 455978 (b) 459578 (c) 457958 (d) 459758

13. If 'DELHI' is coded as '73541' and 'CALCUTTA' as '82589662', how will 'CALICUT' be coded? **[MAT 2012]**

(a) 5279431 (b) 5978213 (c) 8251896 (d) 8543691

14. If in a certain code language 'NOIDA' is written as '39658', then how will 'INDIA' be written in that language? **[SSC (CPO) 2009]**

(a) 36368 (b) 56368 (c) 63568 (d) 63586

15. If in a certain code language 'HONESTY' is written as '5132468' and 'POVERTY' is written as '7192068', then how will 'HORSE' be written in that language? **[SSC (LDC) 2010]**

(a) 50124 (b) 51042 (c) 51024 (d) 52014

16. If in a certain code language 'REFORM' is written as '426349' and 'FORMULA' is written as '6349871', then how will 'MULE' be written in that language? **[SSC (FCI) 2011]**

(a) 8792 (b) 7982 (c) 9872 (d) 2978

17. If 'DREAM' is coded as '78026' and 'CHILD' is coded as '53417', how can 'LEADER' be coded? **[MAT 2012]**

(a) 102078 (b) 102708 (c) 102087 (d) 102780

18. If in a certain language 'BOAT' is written as '5937' and 'TIME' is written as '7826', then how will 'BEAM' be written in that language? **[SBI (PO) 2011]**

(a) 5362 (b) 7632 (c) 5632 (d) 5862
(e) None of these

19. If in a certain code language 'BOARD' is written as '53169', 'NEAR' is written as '2416', then how will 'NODE' be written in that language? **[LIC (ADO) 2011]**

(a) 2394 (b) 2894 (c) 2934 (d) 2694
(e) None of these

20. If in a certain code language 'DEAF' is written as '3587' and 'FILE' is written as '7465', then how will 'IDEAL' be written in that language? **[PNB (Clerk) 2011]**

(a) 48536 (b) 43568 (c) 63548 (d) 43586
(e) None of these

21. If in a certain code language 'GOAL' is written as '5139' and 'LAME' is written as '9327', then how will 'MOLE' be written in that language? **[PNB (Clerk) 2011]**

(a) 2197 (b) 2917 (c) 3197 (d) 2157
(e) None of these

22. If in a certain code language 'BRACKET' is written as '9341285', 'DEAR' is written as '6843', then how will 'TRADE' be written in that language? **[LIC (ADO) 2011]**

(a) 59468 (b) 34568
(c) 53468 (d) 53648
(e) None of these

23. If in a certain code language 'ORIENT' is written as '532146' and 'SOUL' is written as '7598', then how will 'LINE' be written in that language? **[SBI (PO) 2008]**

(a) 9241 (b) 7341
(c) 8241 (d) 6241
(e) None of these

24. If in a certain code language 'PEAK' is written as '3512' and 'DINE' is written as '6895', then how will 'KIND' be written in that language?

(a) 2396 (b) 2986 (c) 2896 (d) 2596

25. If in a certain code language 'CLOUD' is written as '59432' and 'RAIN' is written as '1678', then how will 'AROUND' be written in that language? **[SSC (CPO) 2004]**

(a) 614832 (b) 614382 (c) 641382 (d) 461382

26. If in a certain code language 'TILE' is written as '7235, 'DEAL' is written as '9543', then how will 'DIET' be written in that language? **[PNB (Clerk) 2007]**

(a) 9725 (b) 9257 (c) 9527 (d) 9275
(e) None of these

27. If in a certain code language 'GEAR' is written as '5914' and 'ROUTE' is written as '47289', then how will 'GATE' be written in that language? **[SBI (PO) 2008]**

(a) 5187 (b) 5189 (c) 5289 (d) 5429
(e) None of these

28. If in a certain code language 'BEAUTIFUL' is coded as '573041208' and 'BUTTER' is coded as '504479', then how will 'FUTURE' be coded in that language? **[SNAP 2012]**

(a) 204097 (b) 201497 (c) 704092 (d) 204079

29. If in a certain code language 'SAGE' is written as '4169', 'PERT' is written as '7928', then how will 'STEP' be written in that language? **[IOB (PO) 2010]**

(a) 4897 (b) 4987 (c) 4197 (d) 4387
(e) None of these

30. If WOOD is coded as 23|225|4, then MEET is coded as **[SNAP 2013]**

(a) |3|5|5|20 (b) |13|10|20
(c) |13|25|20 (d) None of these

31. If 'APE' is written '369', then how would 'PEA' be written in the code language?

(a) 369 (b) 693 (c) 936 (d) 963

32. If in a certain code language ‘PARROT’ is written as ‘123345’ and ‘SOAT’ is written as ‘6425’, then how would ‘ROAST’ be written in that same code language?
(a) 32456 (b) 32564 (c) 34625 (d) 34265

33. If in a certain code language ‘DASHE’ is ‘21845’, then how would ‘SHADE’ be written in that same code language?
(a) 84125 (b) 84215 (c) 84152 (d) 84124

34. If ‘DISC’ is coded as ‘8749’ and ‘ACHE’ is coded as ‘3950’, then ‘HEAD’ is coded as
(a) 5038 (b) 5308 (c) 3508 (d) 3805

35. In a certain code language, ‘DOME’ is written as ‘8943’ and ‘MEAL’ is written as ‘4321’. What group of letters can be formed for the code ‘38249’? **[SBI (Clerk) 2012]**
(a) EOADM (b) MEDOA (c) EMDAO (d) EDAMO
(e) None of these

36. If in a certain code language, ‘EAT’ is written as ‘318’ and ‘CHAIR’ is written as ‘24156’, then how ‘TEACHER’ be written in that code language? **[NIFT (UG) 2012]**
(a) 8313426 (b) 8312436 (c) 8321436 (d) 8312346

37. If in a code language letters, of the word ‘CAMEL’ are coded as ‘25106’, the word ‘LION’ is coded as ‘6793’ and the word ‘TIRE’ is coded as ‘4780’. How will the letters of the word ‘ELITE’ be coded in that language?
(a) 06740 (b) 06470 (c) 60476 (d) 06704

38. If in a certain code language ‘TALK’ is written as ‘2121312’, then how will ‘PATNA’ be coded in that language?
(a) 17212152 (b) 17221251 (c) 17221125 (d) 17221152

39. If in a certain code language ‘GRADUATE’ is written as ‘2092623626722’, then how will ‘ARIHANT’ be written in that language?
(a) 269181926137 (b) 269181926173
(c) 269811926137 (d) 269181962137

40. If in a certain code language ‘PERFECT’ is written as ‘116’, then how will ‘COMPACT’ be written in that code?
(a) 85 (b) 111
(c) 98 (d) 118

41. If in a certain code language ‘TRUE’ is written as ‘8316’, then how will ‘TAP’ be written in that language?
(a) 3120 (b) 2002
(c) 2015 (d) 1122

42. If in a certain code language ‘SON’ is written as ‘81213’, ‘LIFE’ is written as ‘15182122’, then how will ‘NEVER’ be written in that language?
(a) 13225229 (b) 22135229
(c) 13225292 (d) 13222529

43. If in a certain code language ‘IPL’ is written as ‘37’ and ‘POLISH’ is written as ‘79’, then how will ‘GRAVITY’ be coded in that language?
(a) 102 (b) 205 (c) 115 (d) 95

44. If A = 1 and ANT = 35, then PAT = ?
(a) 32 (b) 47 (c) 25 (d) 37

45. If E = 5 and EVEN = 46, then ENTER = ?
(a) 62 (b) 52 (c) 72 (d) 42

46. If A = 1 and LOT = 47, then MAT = ? **[SSC (LDC) 2011]**
(a) 40 (b) 66 (c) 34 (d) 51

47. If M = 13 and MAT = 34, then WAX = ? **[RRB (ASM) 2011]**
(a) 47 (b) 25 (c) 48 (d) 23

48. If E = 5 and AMENDMENT = 89, then SECRETARY = ? **[UP B.Ed. 2011]**
(a) 115 (b) 112 (c) 114 (d) 100

49. If A = 1 and VAN = 37, then FAT = ? **[SSC (DEO) 2011]**
(a) 21 (b) 20 (c) 26 (d) 27

50. If C = 3 and POLISH = 79, then POINTER = ? **[SSC (LDC) 2011]**
(a) 95 (b) 96 (c) 97 (d) 98

51. If A = 1 and AND = 56, then CAT = ?
(a) 60 (b) 65 (c) 75 (d) 55

52. If P = 16 and PUT = 6720, then PICK = ?
(a) 4137 (b) 4590 (c) 4032 (d) 4752

53. If P = 16 and TAP = 37, then CUP = ? **[UP B.Ed. 2011]**
(a) 40 (b) 38 (c) 36 (d) 39

54. If N = 14 and NOT = 4200, then NAME = ?
(a) 937 (b) 822 (c) 915 (d) 910

55. If E = 5 and HEN = 27, then PET = ?
(a) 31 (b) 41 (c) 52 (d) 28

56. If T = 20 and TEAM = 39, then TREE = ?
(a) 39 (b) 54 (c) 48 (d) 36

57. If M = 13 and MAD = 52, then MOOD = ?
(a) 11700 (b) 10181 (c) 12500 (d) 95000

58. If G = 7 and GOD = 420, then GAP = ?
(a) 175 (b) 85 (c) 135 (d) 112

59. If ‘MACHINE’ is coded as 19-7-9- 14-15-20-11, then how will you code ‘DANGER’ in the same code?
(a) 11-7-20-16-11-24 (b) 13-7-20-9-11-25
(c) 10-7-20-13-11-24 (d) 13-7-20-10-11-25

60. If 'FLARE' is coded as 21, 15, 26, 9, 22, then how would 'BREIF' be coded in the same language?

(a) 25, 9, 22, 21, 18 (b) 5, 37, 11, 19, 13
(c) 13, 19, 11, 37, 5 (d) 25, 9, 22, 18, 21

61. If in a certain code language 'NOTION' is written as '348', then how will 'TOTAL' be written in that language?

(a) 381 (b) 275 (c) 385 (d) 272

62. If in a certain language 'JNU' is written as '101714132106', then how will 'PUSA' be written in that language? **[UP PCS 2008]**

(a) 1611210619080126 (b) 1611210619080162
(c) 1611210619086201 (d) 1161216019080126

63. If in a certain code language 'GAME' is written as '0720012613140522', then how will 'NOT' be coded in that language?

(a) 121413152007 (b) 131415122007
(c) 141315127002 (d) 141315122007

64. If in a certain code language 'IPL' is written as '81256144', then how will 'BUT' be written in that language?

(a) 4441400 (b) 4444100 (c) 4100444 (d) 4144400

65. If in a certain code language 'GOAT' is coded as '40014467649', then how will 'DO' be written in that language?

(a) 529144 (b) 222591 (c) 592225 (d) 529522

66. If in a certain code language 'RAMAN' is written as '23.5' and 'CAP' is written as '10', then how will 'CAPACITY ' be written in that code?

(a) 48 (b) 39 (c) 49 (d) 35

67. If in a certain code language 'LOT' is written as '111314161921', 'SIP' is written as '18208101517', then how will 'GO' be written in that language?

(a) 681416 (b) 864161 (c) 681476 (d) 681461

68. If in a certain code language 'KOMAL' is written as '31462', 'POT' is written as '267', then how will 'TIGER' be written in that language?

(a) 95927 (b) 95279 (c) 95729 (d) 95792

69. If in a certain code language 'HUT' is written as '9722202119', 'TO' is written as '21191614', then how will 'FOG' be written in that language?

(a) 75161486 (b) 75161468
(c) 75614168 (d) 57161486

70. If in a certain code language 'DEW' is written as '1625529', 'GET' is written as '4925400', then how will 'TWO' be written in that language?

(a) 400529522 (b) 400529225
(c) 400925225 (d) 400225925

71. If in a certain code language 'TOMATO' is written as '264126', 'NET' is written as '552', then how will 'TRACTOR' be written in that language?

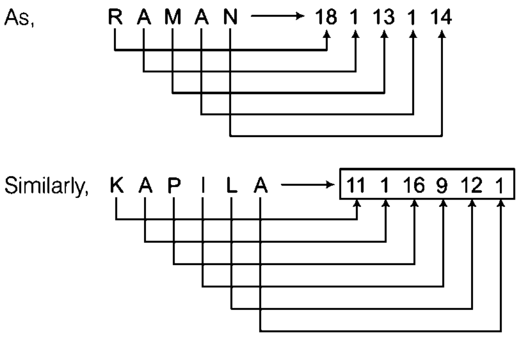
(a) 2813269 (b) 2913269
(c) 2193269 (d) 2913296

72. If 'REASON' is coded as 5 and 'BELIEVED' as 7, what is the code number for 'GOVERNMENT'? **[SSC (Multitasking) 2012]**

(a) 10 (b) 6
(c) 9 (d) 8

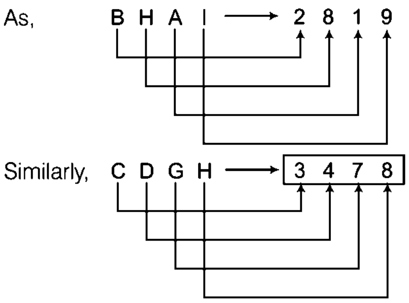
Response & Interpretations **(4.5)**

1. (*c*) Coded with corresponding positions of letters.



∴ KAPILA ⇒ 111169121

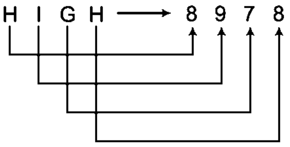
2. (*d*) Coded with corresponding positions of letters.



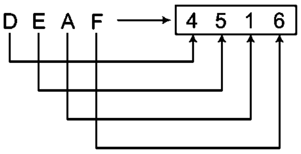
∴ CDGH ⇒ 3478

3. (*b*) Coded with corresponding positions of letters.

As,



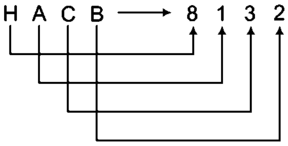
Similarly,



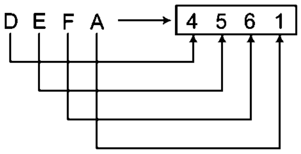
∴ DEAF ⇒ 4516

4. (*b*) Coded with corresponding positions of letters.

As,



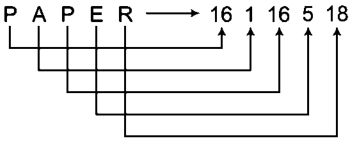
Similarly,



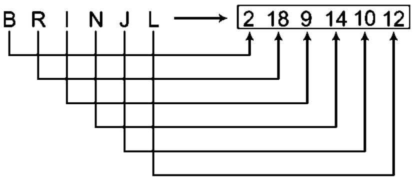
∴ DEFA ⇒ 4561

5. (*a*) Coded with corresponding positions of letters.

As,


P A P E R
16 1 16 5 18

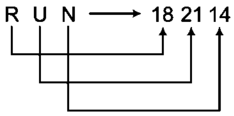
Similarly,


B R I N J L
2 18 9 14 10 12

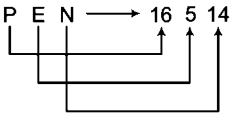
∴ BRINJL ⇒ 2189141012

6. (*d*) Letters are coded with their corresponding positions.

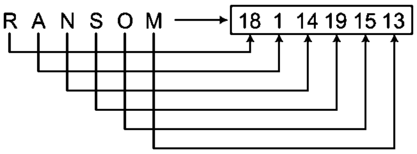
As,



and



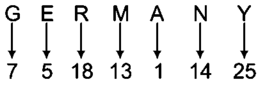
Similarly,


R A N S O M
18 1 14 19 15 13

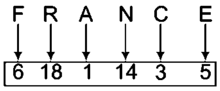
∴ RANSOM ⇒ 18114191513

7. (*a*) Letters are coded with their corresponding positions.

As,


G E R M A N Y
7 5 18 13 1 14 25

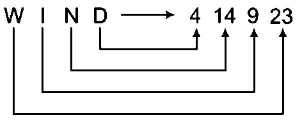
Similarly,


F R A N C E
6 18 1 14 3 5

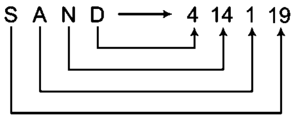
∴ FRANCE ⇒ 6, 18, 1, 14, 3, 5

8. (*d*) Starting from right, each letter is coded with its corresponding position in English alphabet.

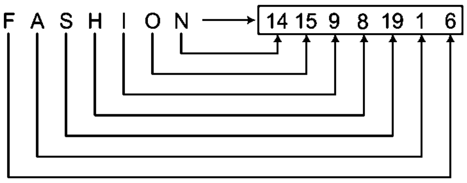
As,


W I N D
4 14 9 23

and


S A N D
4 14 1 19

Similarly,


F A S H I O N
14 15 9 8 19 1 6

∴ FASHION ⇒ 1415981916

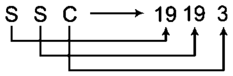
9. (*c*) 7 is coded as CBRT 343.

343 is the cube of 7 *i.e.*, ($7^3 = 343$).

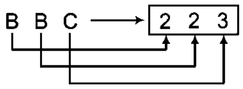
Similarly, 9 is coded as CBRT 729.

729 is the cube of 9 *i.e.*, ($9^3 = 729$).

10. (*c*) As,

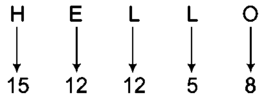


Similarly,



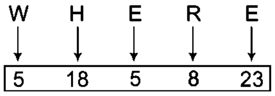
∴ BBC ⇒ 223

11. (*b*) Basic word


H E L L O
15 12 12 5 8

'H' has 8th position in the alphabetical order and 'O' has 15th position as in the alphabetical order. Both the positions of numeric form are interchanged as shown in the above figure. Similarly, 'L' has 12th position which is interchanged with 'E' s position i.e., '5' and so on. In the same way.

Basic word


W H E R E
5 18 5 8 23

12. (*a*) As, $\begin{array}{ccccc}P&A&I&N&T\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\7&4&1&2&8\end{array}$ and $\begin{array}{ccccc}E&X&C&E&L\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\9&3&5&9&6\end{array}$

Similarly, $\begin{array}{cccccc}A&C&C&E&P&T\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\4&5&5&9&7&8\end{array}$

∴ ACCEPT ⇒ 455978

13. (*c*) As, $\begin{array}{ccccc}D&E&L&H&I\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\7&3&5&4&1\end{array}$ and $\begin{array}{cccccccc}C&A&L&C&U&T&T&A\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\8&2&5&8&9&6&6&2\end{array}$

Similarly, $\begin{array}{ccccccc}C&A&L&I&C&U&T\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\8&2&5&1&8&9&6\end{array}$

∴ CALICUT ⇒ 8251896

14. (*c*) As, $\begin{array}{ccccc}N&O&I&D&A\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\3&9&6&5&8\end{array}$ Similarly, $\begin{array}{ccccc}I&N&D&I&A\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\6&3&5&6&8\end{array}$

∴ INDIA ⇒ 63568

15. (*b*) As, $\begin{array}{ccccccc}H&O&N&E&S&T&Y\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\5&1&3&2&4&6&8\end{array}$ and $\begin{array}{ccccccc}P&O&V&E&R&T&Y\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\7&1&9&2&0&6&8\end{array}$

Similarly, $\begin{array}{ccccc}H&O&R&S&E\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\5&1&0&4&2\end{array}$

∴ HORSE ⇒ 51042

16. (*c*) As, $\begin{array}{cccccc}R&E&F&O&R&M\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\4&2&6&3&4&9\end{array}$ and $\begin{array}{ccccccc}F&O&R&M&U&L&A\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\6&3&4&9&8&7&1\end{array}$

Similarly, $\begin{array}{cccc}M&U&L&E\\\downarrow&\downarrow&\downarrow&\downarrow\\9&8&7&2\end{array}$

∴ MULE ⇒ 9872

17. (*b*) As, $\begin{array}{ccccc}D&R&E&A&M\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\7&8&0&2&6\end{array}$

and $\begin{array}{ccccc}C&H&I&L&D\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\5&3&4&1&7\end{array}$

Similarly, $\begin{array}{cccccc}L&E&A&D&E&R\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\1&0&2&7&0&8\end{array}$

∴ LEADER ⇒ 102708

18. (*c*) As, $\begin{array}{cccc}B&O&A&T\\\downarrow&\downarrow&\downarrow&\downarrow\\5&9&3&7\end{array}$ and $\begin{array}{cccc}T&I&M&E\\\downarrow&\downarrow&\downarrow&\downarrow\\7&8&2&6\end{array}$

Similarly, $\begin{array}{cccc}B&E&A&M\\\downarrow&\downarrow&\downarrow&\downarrow\\5&6&3&2\end{array}$

∴ BEAM ⇒ 5632

19. (*a*) As, $\begin{array}{ccccc}B&O&A&R&D\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\5&3&1&6&9\end{array}$ and $\begin{array}{cccc}N&E&A&R\\\downarrow&\downarrow&\downarrow&\downarrow\\2&4&1&6\end{array}$

Similarly, $\begin{array}{cccc}N&O&D&E\\\downarrow&\downarrow&\downarrow&\downarrow\\2&3&9&4\end{array}$

∴ NODE ⇒ 2394

20. (*a*) As, $\begin{array}{cccc}D&E&A&F\\\downarrow&\downarrow&\downarrow&\downarrow\\3&5&8&7\end{array}$ and $\begin{array}{cccc}F&I&L&E\\\downarrow&\downarrow&\downarrow&\downarrow\\7&4&6&5\end{array}$

Similarly, $\begin{array}{ccccc}I&D&E&A&L\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\4&3&5&8&6\end{array}$

∴ IDEAL ⇒ 43586

21. (*a*) As, $\begin{array}{cccc}G&O&A&L\\\downarrow&\downarrow&\downarrow&\downarrow\\5&1&3&9\end{array}$ and $\begin{array}{cccc}L&A&M&E\\\downarrow&\downarrow&\downarrow&\downarrow\\9&3&2&7\end{array}$

Similarly, $\begin{array}{cccc}M&O&L&E\\\downarrow&\downarrow&\downarrow&\downarrow\\2&1&9&7\end{array}$

∴ MOLE ⇒ 2197

22. (*c*) As, $\begin{array}{ccccccc}B&R&A&C&K&E&T\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\9&3&4&1&2&8&5\end{array}$ and $\begin{array}{cccc}D&E&A&R\\\downarrow&\downarrow&\downarrow&\downarrow\\6&8&4&3\end{array}$

Similarly, $\begin{array}{ccccc}T&R&A&D&E\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\5&3&4&6&8\end{array}$

∴ TRADE ⇒ 53468

23. (*c*) As, $\begin{array}{cccccc}O&R&I&E&N&T\\\downarrow&\downarrow&\downarrow&\downarrow&\downarrow&\downarrow\\5&3&2&1&4&6\end{array}$ and $\begin{array}{cccc}S&O&U&L\\\downarrow&\downarrow&\downarrow&\downarrow\\7&5&9&8\end{array}$

Similarly, $\begin{array}{cccc}L&I&N&E\\\downarrow&\downarrow&\downarrow&\downarrow\\8&2&4&1\end{array}$

∴ LINE ⇒ 8241

24. (*c*) As,

P	E	A	K
3	5	1	2

and

D	I	N	E
6	8	9	5

Similarly,

K	I	N	D
2	8	9	6

∴ KIND ⇒ 2896

25. (*b*) As,

C	L	O	U	D
5	9	4	3	2

and

R	A	I	N
1	6	7	8

Similarly,

A	R	O	U	N	D
6	1	4	3	8	2

∴ AROUND ⇒ 614382

26. (*b*) As,

T	I	L	E
7	2	3	5

and

D	E	A	L
9	5	4	3

Similarly,

D	I	E	T
9	2	5	7

∴ DIET ⇒ 9257

27. (*b*) As,

G	E	A	R
5	9	1	4

and

R	O	U	T	E
4	7	2	8	9

Similarly,

G	A	T	E
5	1	8	9

∴ GATE ⇒ 5189

28. (*a*) As,

B	E	A	U	T	I	F	U	L
5	7	3	0	4	1	2	0	8

and

B	U	T	T	E	R
5	0	4	4	7	9

Similarly,

F	U	T	U	R	E
2	0	4	0	9	7

∴ FUTURE ⇒ 204097

29. (*a*) As,

S	A	G	E
4	1	6	9

and

P	E	R	T
7	9	2	8

Similarly,

S	T	E	P
4	8	9	7

∴ STEP ⇒ 4897

30. (*c*)

		$(15)^2$	
Basic word	W	O O	D
Coded word	23	225	4

In this 'W' has 23rd position in the alphabetical order, 'D' has 4th position, 'O' has 15th position in the alphabetical order and 225 is the square of number 15.

		$(5)^2$	
Basic word	M	E E	T
Coded word	13	25	20

'M' has 13th position, 'T' has 20th position and 'E' has 5th position in alphabetical order and 25 is the square of number 5.

31. (*b*) As,

A → 3
P → 6
E → 9

Similarly,

P → 6
E → 9
A → 3

∴ PEA ⇒ 693

32. (*d*) As,

P → 1
A → 2
R → 3
R → 3
O → 4
T → 5

and

S → 6
O → 4
A → 2
T → 5

Similarly,

R → 3
O → 4
A → 2
S → 6
T → 5

∴ ROAST ⇒ 34265

33. (*a*) As,

D → 2
A → 1
S → 8
H → 4
E → 5

Similarly,

S → 8
H → 4
A → 1
D → 2
E → 5

∴ SHADE ⇒ 84125

34. (*a*)

Letters	D	I	S	C	A	H	E
Code	8	7	4	9	3	5	0

So, code of HEAD is 5038.

35. (*d*) As,

D	O	M	E	M	E	A	L
8	9	4	3	4	3	2	1

Similarly,

3	8	2	4	9
E	D	A	M	O

∴ 38249 ⇒ EDAMO

36. (*b*) As,

E → 3
A → 1
T → 8

and

C → 2
H → 4
A → 1
I → 5
R → 6

Similarly,

T → 8
E → 3
A → 1
C → 2
H → 4
E → 3
R → 6

∴ TEACHER ⇒ 8312436

37. (*a*) As,

C → 2, A → 5, M → 1, E → 0, L → 6, L → 6, I → 7, O → 9, N → 3

and

T → 4, I → 7, R → 8, E → 0

In these three words each letter is represented by a specific digit. Therefore,

E → 0, L → 6, I → 7, T → 4, E → 0

Hence, ELITE is coded as 06740.

38. (*a*) As,

T(20) A(1) L(12) K(11) → +1 each → 21 2 13 12

Similarly,

P(16) A(1) T(20) N(14) A(1) → +1 each → 17 2 21 15 2

∴ PATNA ⇒ 17221152

39. (*a*) Each letter is coded with its backward order letter position.

As, G R A D U A T E ⟶ 20 9 26 23 6 26 7 22

Similarly,

A R I H A N T ⟶ 26 9 18 19 26 13 7

∴ ARIHANT ⇒ 269181926137

40. (*d*) Backward order corresponding positions of letters are added.

As,
P E R F E C T ⟶ 11 + 22 + 9 + 21 + 22 + 24 + 7 = 116

Similarly,

C O M P A C T ⟶ 24 + 12 + 14 + 11 + 26 + 24 + 7 = 118

∴ COMPACT ⇒ 118

41. (*b*) Backward order letter positions are multiplied.

As, T R U E ⟶ 7 × 9 × 6 × 22 = 8316

Similarly, T A P ⟶ 7 × 26 × 11 = 2002

∴ TAP ⇒ 2002

42. (*a*) Letters are coded with their backward order letter positions.

As, S O N ⟶ 8 12 13

and L I F E ⟶ 15 18 21 22

Similarly, N E V E R ⟶ 13 22 5 22 9

∴ NEVER ⇒ 13225229

43. (*a*) Required answer = Sum of the corresponding letter positions.

As, I P L ⟶ [9 + 16 + 12] = 37

Also, P O L I S H ⟶ [16 + 15 + 12 + 9 + 19 + 8] = 79

Similarly,

G R A V I T Y ⟶ [7 + 18 + 1 + 22 + 9 + 20 + 25] = $\textcircled{102}$

∴ GRAVITY = 102

44. (*d*) As, A = 1

and
$$\begin{array}{ccc} 1 & 14 & 20 \\ \text{A} & \text{N} & \text{T} \\ \downarrow & \downarrow & \downarrow \\ 1 & +14 & +20 = 35 \end{array}$$
Similarly,
$$\begin{array}{ccc} 16 & 1 & 20 \\ \text{P} & \text{A} & \text{T} \\ \downarrow & \downarrow & \downarrow \\ 16 & +1 & +20 = \textcircled{37} \end{array}$$

∴ PAT ⇒ 37

45. (*a*) As, E = 5

and
$$\begin{array}{cccc} 5 & 22 & 5 & 14 \\ \text{E} & \text{V} & \text{E} & \text{N} \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & +22 & +5 & +14 = 46 \end{array}$$
Similarly,
$$\begin{array}{ccccc} 5 & 14 & 20 & 5 & 18 \\ \text{E} & \text{N} & \text{T} & \text{E} & \text{R} \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & +14 & +20 & +5 & +18 = \textcircled{62} \end{array}$$

∴ ENTER = 62

46. (*c*) As, A = 1

and
$$\begin{array}{ccc} 12 & 15 & 20 \\ \text{L} & \text{O} & \text{T} \\ \downarrow & \downarrow & \downarrow \\ 12 & +15 & +20 = 47 \end{array}$$
Similarly,
$$\begin{array}{ccc} 13 & 1 & 20 \\ \text{M} & \text{A} & \text{T} \\ \downarrow & \downarrow & \downarrow \\ 13 & +1 & +20 = \textcircled{34} \end{array}$$

∴ MAT ⇒ 34

47. (*c*) As, M = 13

and
$$\begin{array}{ccc} 13 & 1 & 20 \\ \text{M} & \text{A} & \text{T} \\ \downarrow & \downarrow & \downarrow \\ 13 & +1 & +20 = 34 \end{array}$$
Similarly,
$$\begin{array}{ccc} 23 & 1 & 24 \\ \text{W} & \text{A} & \text{X} \\ \downarrow & \downarrow & \downarrow \\ 23 & +1 & +24 = \textcircled{48} \end{array}$$

∴ WAX ⇒ 48

48. (*c*) As, E = 5

and
$$\begin{array}{ccccccccc} 1 & 13 & 5 & 14 & 4 & 13 & 5 & 14 & 20 \\ \text{A} & \text{M} & \text{E} & \text{N} & \text{D} & \text{M} & \text{E} & \text{N} & \text{T} \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & +13 & +5 & +14 & +4 & +13 & +5 & +14 & +20 = 89 \end{array}$$
Similarly,
$$\begin{array}{ccccccccc} 19 & 5 & 3 & 18 & 5 & 20 & 1 & 18 & 25 \\ \text{S} & \text{E} & \text{C} & \text{R} & \text{E} & \text{T} & \text{A} & \text{R} & \text{Y} \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 19 & +5 & +3 & +18 & +5 & +20 & +1 & +18 & +25 = \textcircled{114} \end{array}$$

∴ SECRETARY ⇒ 114

49. (*d*) As, A = 1

and
$$\begin{array}{ccc} 22 & 1 & 14 \\ \text{V} & \text{A} & \text{N} \\ \downarrow & \downarrow & \downarrow \\ 22 & +1 & +14 = 37 \end{array}$$
Similarly,
$$\begin{array}{ccc} 6 & 1 & 20 \\ \text{F} & \text{A} & \text{T} \\ \downarrow & \downarrow & \downarrow \\ 6 & +1 & +20 = \textcircled{27} \end{array}$$

∴ FAT ⇒ 27

50. (*c*) As, C = 3

and
$$\begin{array}{cccccc} 16 & 15 & 12 & 9 & 19 & 8 \\ \text{P} & \text{O} & \text{L} & \text{I} & \text{S} & \text{H} \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 16 & +15 & +12 & +9 & +19 & +8 = 79 \end{array}$$
Similarly,
$$\begin{array}{ccccccc} 16 & 15 & 9 & 14 & 20 & 5 & 18 \\ \text{P} & \text{O} & \text{I} & \text{N} & \text{T} & \text{E} & \text{R} \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 16 & +15 & +9 & +14 & +20 & +5 & +18 = \textcircled{97} \end{array}$$

∴ POINTER ⇒ 97

51. (*a*) As, A = 1

and
$$\begin{array}{ccc} 1 & 14 & 4 \\ \text{A} & \text{N} & \text{D} \\ \downarrow & \downarrow & \downarrow \\ 1 & \times 14 & \times 4 = 56 \end{array}$$
Similarly,
$$\begin{array}{ccc} 3 & 1 & 20 \\ \text{C} & \text{A} & \text{T} \\ \downarrow & \downarrow & \downarrow \\ 3 & \times 1 & \times 20 = \textcircled{60} \end{array}$$

∴ CAT ⇒ 60

52. (*d*) As, P = 16

and
$$\begin{array}{ccc} 16 & 21 & 20 \\ \text{P} & \text{U} & \text{T} \\ \downarrow & \downarrow & \downarrow \\ 16 & \times 21 & \times 20 = 6720 \end{array}$$
Similarly,
$$\begin{array}{cccc} 16 & 9 & 3 & 11 \\ \text{P} & \text{I} & \text{C} & \text{K} \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 16 & \times 9 & \times 3 & \times 11 = \textcircled{4752} \end{array}$$

∴ PICK ⇒ 4752

53. (*a*) As, P = 16

and
$$\begin{array}{ccc} 20 & 1 & 16 \\ \text{T} & \text{A} & \text{P} \\ \downarrow & \downarrow & \downarrow \\ 20 & +1 & +16 = 37 \end{array}$$
Similarly,
$$\begin{array}{ccc} 3 & 21 & 16 \\ \text{C} & \text{U} & \text{P} \\ \downarrow & \downarrow & \downarrow \\ 3 & +21 & +16 = \textcircled{40} \end{array}$$

∴ CUP ⇒ 40

54. (*d*) As, N = 14

and
$$\begin{array}{ccc} 14 & 15 & 20 \\ \text{N} & \text{O} & \text{T} \\ \downarrow & \downarrow & \downarrow \\ 14 & \times 15 & \times 20 = 4200 \end{array}$$
Similarly,
$$\begin{array}{cccc} 14 & 1 & 13 & 5 \\ \text{N} & \text{A} & \text{M} & \text{E} \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 14 & \times 1 & \times 13 & \times 5 = \textcircled{910} \end{array}$$

∴ NAME ⇒ 910

55. (*b*) As, E = 5

and
$$\begin{array}{ccc} 8 & 5 & 14 \\ \text{H} & \text{E} & \text{N} \\ \downarrow & \downarrow & \downarrow \\ 8 & +5 & +14 = 27 \end{array}$$
Similarly,
$$\begin{array}{ccc} 16 & 5 & 20 \\ \text{P} & \text{E} & \text{T} \\ \downarrow & \downarrow & \downarrow \\ 16 & +5 & +20 = \textcircled{41} \end{array}$$

∴ PET ⇒ 41

56. (*c*) As, T = 20

and $\begin{array}{cccc} 20 & 5 & 1 & 13 \\ T & E & A & M \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 20 + & 5 + & 1 + & 13 = 39 \end{array}$ Similarly, $\begin{array}{cccc} 20 & 18 & 5 & 5 \\ T & R & E & E \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 20 + & 18 + & 5 + & 5 = ⓸⓼ \end{array}$

∴ TREE ⇒ 48

57. (*a*) As, M = 13

and $\begin{array}{ccc} 13 & 1 & 4 \\ M & A & D \\ \downarrow & \downarrow & \downarrow \\ 13 \times & 1 \times & 4 = 52 \end{array}$ Similarly, $\begin{array}{cccc} 13 & 15 & 15 & 4 \\ M & O & O & D \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 13 \times & 15 \times & 15 \times & 4 = \boxed{11700} \end{array}$

∴ MOOD ⇒ 11700

58. (*d*) As, G = 7

and $\begin{array}{ccc} 7 & 15 & 4 \\ G & O & D \\ \downarrow & \downarrow & \downarrow \\ 7 \times & 15 \times & 4 = 420 \end{array}$ Similarly, $\begin{array}{ccc} 7 & 1 & 16 \\ G & A & P \\ \downarrow & \downarrow & \downarrow \\ 7 \times & 1 \times & 16 = \boxed{112} \end{array}$

∴ GAP ⇒ 112

59. (*c*) As, $\begin{array}{l} \overset{13}{M} \xrightarrow{+6} 19 \\ \overset{1}{A} \xrightarrow{+6} 7 \\ \overset{3}{C} \xrightarrow{+6} 9 \\ \overset{8}{H} \xrightarrow{+6} 14 \\ \overset{9}{I} \xrightarrow{+6} 15 \\ \overset{14}{N} \xrightarrow{+6} 20 \\ \overset{5}{E} \xrightarrow{+6} 11 \end{array}$ Similarly, $\begin{array}{l} \overset{4}{D} \xrightarrow{+6} 10 \\ \overset{1}{A} \xrightarrow{+6} 7 \\ \overset{14}{N} \xrightarrow{+6} 20 \\ \overset{7}{G} \xrightarrow{+6} 13 \\ \overset{5}{E} \xrightarrow{+6} 11 \\ \overset{18}{R} \xrightarrow{+6} 24 \end{array}$

∴ DANGER ⇒ 10-7-20-13-11-24

60. (*d*) As, $\begin{array}{l} F \to 21 \\ L \to 15 \\ A \to 26 \\ R \to 9 \\ E \to 22 \end{array}$ Similarly, $\begin{array}{l} B \to 25 \\ R \to 9 \\ E \to 22 \\ I \to 18 \\ F \to 21 \end{array}$

∴ BRIEF ⇒ 25, 9, 22, 18, 21

➘ Each letter is coded with its backword order letter position.

61. (*d*) Coded with (Sum of the corresponding positions) × 4.

As,

N O T I O N ⟶ [14 + 15 + 20 + 9 + 15 + 14] × 4 = 87 × 4
= 348

Similarly,

T O T A L ⟶ [20 + 15 + 20 + 1 + 12] × 4 = 68 × 4
= 272

∴ TOTAL ⇒ 272

62. (*a*) As, $\begin{array}{ccc} J & N & U \\ \downarrow & \downarrow & \downarrow \\ 10\ 17 & 14\ 13 & 21\ 06 \end{array}$ ⟶ Opposite letter position

Similarly, $\begin{array}{cccc} P & U & S & A \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 16\ 11 & 21\ 06 & 19\ 08 & 01\ 26 \end{array}$ ⟶ Opposite letter position

∴ PUSA ⇒ 1611210619080126

63. (*d*) As, $\begin{array}{cccc} G & A & M & E \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 07\ 20 & 01\ 26 & 13\ 14 & 05\ 22 \end{array}$ ⟶ Opposite letter position

Similarly, $\begin{array}{ccc} N & O & T \\ \downarrow & \downarrow & \downarrow \\ 14\ 13 & 15\ 12 & 20\ 07 \end{array}$ ⟶ Opposite letter coding

∴ NOT ⇒ 141315122007

64. (*a*) Corresponding position of each letter is squared.

As, $\begin{array}{ccc} 9 & 16 & 12 \\ I & P & L \end{array} \longrightarrow \begin{array}{ccc} (9 \times 9) & (16 \times 16) & (12 \times 12) \\ 81 & 256 & 144 \end{array}$

Similarly, $\begin{array}{ccc} 2 & 21 & 20 \\ B & U & T \end{array} \longrightarrow \boxed{\begin{array}{ccc} (2 \times 2) & (21 \times 21) & (20 \times 20) \\ 4 & 441 & 400 \end{array}}$

∴ BUT ⇒ 4441400

65. (*a*) Backward order letter positions are squared. Let us see

As, $\begin{array}{cccc} 20 & 12 & 26 & 7 \\ G & O & A & T \end{array} \longrightarrow \begin{array}{cccc} (20 \times 20) & (12 \times 12) & (26 \times 26) & (7 \times 7) \\ 400 & 144 & 676 & 49 \end{array}$

Simillarly, 23 12
D O ⟶ $\boxed{\begin{matrix}(23\times23) & (12\times12)\\ 529 & 144\end{matrix}}$

∴ DO ⇒ 529144

66. (*b*) Required answer

$= \dfrac{\text{Sum of the corresponding letter positions}}{2}$

As,
R A M A N ⟶ [18 + 1 + 13 + 1 + 14] ÷ 2 ⇒ 47/2
= 23.5

Also, C A P ⟶ [3 + 1 + 16] ÷ 2 ⇒ 20/2 = 10

Similarly,
C A P A C I T Y ⟶ [3 + 1 + 16 + 1 + 3 + 9 + 20 + 25] ÷ 2 ⇒ 78/2
= ㊴

∴ CAPACITY ⇒ 39

67. (*a*) Each letter is coded with its left and right letters positions.

As, 12 15 20 ⟶ 11 13 14 16 19 21
L O T ⟶ K M N P S U

Also, 19 9 16 ⟶ 18 20 8 10 15 17
S I P ⟶ R T H J O Q

Similarly, 7 15
G O ⟶ $\boxed{\begin{matrix}6\ 8\ \ 14\ 16\\ \text{F H N P}\end{matrix}}$

∴ GO ⇒ 681416

68. (*d*) Starting from right, each letter is coded with the digits sum of its corresponding position.

As, 11 15 13 1 12 ⟶ (1 + 2) (0 + 1) (1 + 3) (1 + 5) (1 + 1)
K O M A L ⟶ 3 1 4 6 2

and 16 15 20 ⟶ (2 + 0) (1 + 5) (1 + 6)
P O T ⟶ 2 6 7

Similarly,
20 09 07 05 18
T I G E R ⟶ $\boxed{\begin{matrix}(1+8) & (0+5) & (0+7) & (0+9) & (2+0)\\ 9 & 5 & 7 & 9 & 2\end{matrix}}$

∴ TIGER ⇒ 95792

69. (*a*) Each letter is coded with its right and left letters positions, respectively.

As, 8 21 20 ⟶ 9 7 22 20 21 19
H U T ⟶ I G V T U S

Also, 20 15 ⟶ 21 19 16 14
T O ⟶ U S P N

Similarly, 6 15 7
F O G ⟶ $\boxed{\begin{matrix}7\ 5\ \ 16\ 14\ \ 8\ 6\\ \text{G E P N H F}\end{matrix}}$

∴ FOG ⇒ 75161486

70. (*b*) Each letter is coded with the square of its letter positions.

As, D E W ⟶ (4 × 4) (5 × 5) (23 × 23)
16 25 529

and 7 5 20 ⟶ (7 × 7) (5 × 5) (20 × 20)
G E T ⟶ 49 25 400

Similarly, 20 23 15
T W O ⟶ $\boxed{\begin{matrix}(20\times20) & (23\times23) & (15\times15)\\ 400 & 529 & 225\end{matrix}}$

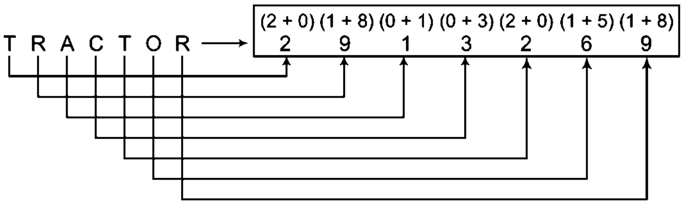
∴ TWO ⇒ 400529225

71. (*b*) Each letter is coded with the digits sum of its letters positions in English alphabet. Let us see

As,
(2 + 0) (1 + 5) (1 + 3) (0 + 1) (2 + 0) (1 + 5)
T O M A T O ⟶ 2 6 4 1 2 6

Also, (1 + 4) (0 + 5) (2 + 0)
N E T ⟶ 5 5 2

Similarly,



∴ TRACTOR ⇒ 2913269

72. (c) Given, REASON = 5 and BELIEVED = 7

Here, number of letters in the word −1= code

Similarly, GOVERNMENT = 10 − 1

∴ GOVERNMENT = 9

Type 6 Symbol Coding Based on Similarity

In symbol coding, various symbols are assigned to the letters of a word and based upon their correlation or similarity, the candidates are required to determine the rules or pattern which is being followed.

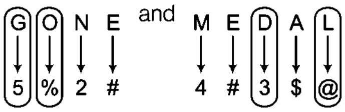
Under this pattern each letter of a letter group/word is coded on the basis of the similarity of two or more given codes.

Following example will give you a better idea about the type of questions asked

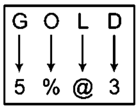
***Ex* 19** In a certain code 'GONE' is written as 5 % 2 # and 'MEDAL' is written as 4#3 $@, then how will 'GOLD' be written in that code?

(a) 5 @ % 3 (b) 5% @ 3 (c) 5 # @ 3 (d) 5 % # 3

Sol. (*b*) As,



Similarly,



∴ GOLD ⇒ 5 % @ 3

Practice Corner **4.6**

Build your Confidence...

1. If in a certain code language 'STAR' is written as '5 $ ★ 2', 'TORE' is written as '$ 3 2 @', then how will 'OATS' be written in that language? **[LIC (ADO) 2009]**

(a) 3 ★ 5 $ (b) 3 ★ $ 5
(c) 3 $ ★ 5 (d) 3 5 ★ $
(e) None of these

2. If in a certain code language 'GONE' is written as '5 @ © 9' and 'SEAL' is written as '6 9 % ★', then how will 'LOGS' be written in that language? **[SBI (Clerk) 2010]**

(a) ★ © 56 (b) ★ 9 © 6
(c) ★ @ 65 (d) ★ @ 56
(e) None of these

3. If in a certain code language 'FIRE' is written as '# % @ $' and 'DEAL' is written as '© $ ★ ↑', then how will 'FAIL' be written is that language?

(a) # ★ % ↑ (b) # $ % ↑
(c) # ★ @ $ (d) # ★ © ↑

4. If in a certain code language 'ROPE' is written as '% 5 7 $', 'DOUBT' is written as '3 5 # 8 ★', and 'LIVE' is written as '@ 2 4 $', then how will 'TROUBLE' be written in that language? **[IBPS (PO) 2011]**

(a) ★ % 5 $ 8 @ $ (b) ★ % # 58 @ $
(c) ★ % 5 # 8 @ 4 (d) ★ % # 58 $ 8
(e) None of these

5. In a certain code, 'BASKET' is written as '5$3%#1' and 'TRIED' is written as '14 ★ # 2'. How is 'SKIRT' written in that code? **[IBPS (PO) 2011]**

(a) 3 % ★ 4 1 (b) 3 ★ % 4 1 (c) 3 % # 4 1 (d) 3 # 4 % 1
(e) None of these

6. If in a certain language 'HEART' is written as '@8531', 'FEAST' is written as '#8541', then how will 'FARTHEST' be written in that language? **[IBPS (Clerk) 2011]**

(a) @ 8 5 4 3 # 1 8 (b) # 5 3 1 4 @ 8 1
(c) # 5 3 1 @ 8 4 1 (d) 4 5 3 1 @ 8 4 5
(e) None of these

7. If in a certain code language 'RAT' is written as '★Δ %', 'CAT' is written as '# Δ %' and 'FAT' is written as '$ Δ %', then how will 'CAR' be written in that language? **[IBPS (Clerk) 2011]**

(a) $ % Δ (b) # % $
(c) # H Δ (d) # Δ H
(e) None of these

8. If in a certain code language 'RAIN' is written as '8 $ % 6', 'MORE' is written as '7 # 8 @', then how will 'REMAIN' be written is that language?

(a) 8 @ 7 $ % 6 (b) 7 @ # $ % 6
(c) # @ 7 $ % 6 (d) None of these

9. If in a certain code language 'RAID' is written as '% # ★ $' and 'RIPE' is written as '% ★ @ ©', then how will 'DEAR' be written in that language?

(a) @ © # % (b) % $ @ #
(c) % @ $ # (d) None of these

10. In a certain code, P is #, A is %, C is ϕ and E is @. How is PEACE written in that code? **[IBPS (Clerk) 2012]**

(a) # @ % @ # (b) # @ # ϕ @ (c) % # @ ϕ % (d) # @ % ϕ @
(e) None of these

11. In a certain code, 'DOWN' is written as '5@9#' and 'NAME' is written as '#6%3'. How would 'MODE' be written in that code? **[SBI (PO) 2010]**

(a) %653 (b) %@63
(c) %5@3 (d) %@53
(e) None of these

12. In a certain code language, 'SAFER' is written as '5@3#2' and 'RIDE' is written as '2© %#', how would 'FEDS' be written in that code? **[RBI (Grade 'B') 2009]**

(a) 3 # © 5 (b) 3 @ % 5
(c) 3 # % 5 (d) 3 # % 2
(e) None of these

Response & Interpretations **(4.6)**

1. (b) As, $\begin{array}{cccc} S & T & A & R \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & \$ & \star & 2 \end{array}$ and $\begin{array}{cccc} T & O & R & E \\ \downarrow & \downarrow & \downarrow & \downarrow \\ \$ & 3 & 2 & @ \end{array}$ Similarly, $\begin{array}{cccc} O & A & T & S \\ \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{3} & \boxed{\star} & \boxed{\$} & \boxed{5} \end{array}$

∴ OATS ⇒ 3 ★ $ 5

2. (d) As, $\begin{array}{cccc} G & O & N & E \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & @ & \copyright & 9 \end{array}$ and $\begin{array}{cccc} S & E & A & L \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 6 & 9 & \% & \star \end{array}$ Similarly, $\begin{array}{cccc} L & O & G & S \\ \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{\star} & \boxed{@} & \boxed{5} & \boxed{6} \end{array}$

LOGS ⇒ ★ @ 56

3. (a) As, $\begin{array}{cccc} F & I & R & E \\ \downarrow & \downarrow & \downarrow & \downarrow \\ \# & \% & @ & \$ \end{array}$ and $\begin{array}{cccc} D & E & A & L \\ \downarrow & \downarrow & \downarrow & \downarrow \\ \copyright & \$ & \star & \uparrow \end{array}$ Similarly, $\begin{array}{cccc} F & A & I & L \\ \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{\#} & \boxed{\star} & \boxed{\%} & \boxed{\uparrow} \end{array}$

∴ FAIL ⇒ # ★ % ↑

4. (e) As, $\begin{array}{cccc} R & O & P & E \\ \downarrow & \downarrow & \downarrow & \downarrow \\ \% & 5 & 7 & \$ \end{array}$, $\begin{array}{ccccc} D & O & U & B & T \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 3 & 5 & \# & 8 & \star \end{array}$

and $\begin{array}{cccc} L & I & V & E \\ \downarrow & \downarrow & \downarrow & \downarrow \\ @ & 2 & 4 & \$ \end{array}$

Similarly, $\begin{array}{ccccccc} T & R & O & U & B & L & E \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{\star} & \boxed{\%} & \boxed{5} & \boxed{\#} & \boxed{8} & \boxed{@} & \boxed{\$} \end{array}$

∴ TROUBLE ⇒ ★ % 5 # 8 @ $

5. (a) As, $\begin{array}{cccccc} B & A & S & K & E & T \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & \$ & 3 & \% & \# & 1 \end{array}$ and $\begin{array}{ccccc} T & R & I & E & D \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & 4 & \star & \# & 2 \end{array}$

Similarly, $\begin{array}{ccccc} S & K & I & R & T \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 3 & \% & \star & 4 & 1 \end{array}$

∴ SKIRT ⇒ 3%★41

6. (c) As, $\begin{array}{ccccc} H & E & A & R & T \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ @ & 8 & 5 & 3 & 1 \end{array}$ and $\begin{array}{ccccc} F & E & A & S & T \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ \# & 8 & 5 & 4 & 1 \end{array}$

Similarly, $\begin{array}{cccccccc} F & A & R & T & H & E & S & T \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{\#} & \boxed{5} & \boxed{3} & \boxed{1} & \boxed{@} & \boxed{8} & \boxed{4} & \boxed{1} \end{array}$

∴ FARTHEST ⇒ #531@841

7. (e) As, $\begin{array}{ccc} R & A & T \\ \downarrow & \downarrow & \downarrow \\ \star & \Delta & \% \end{array}$, $\begin{array}{ccc} C & A & T \\ \downarrow & \downarrow & \downarrow \\ \# & \Delta & \% \end{array}$ and $\begin{array}{ccc} F & A & T \\ \downarrow & \downarrow & \downarrow \\ \$ & \Delta & \% \end{array}$

Similarly, $\begin{array}{ccc} C & A & R \\ \downarrow & \downarrow & \downarrow \\ \boxed{\#} & \boxed{\Delta} & \boxed{\star} \end{array}$

∴ CAR ⇒ # Δ ★

8. (*a*) As,
$$\boxed{\begin{matrix}R\\\downarrow\\8\end{matrix}}\boxed{\begin{matrix}A\\\downarrow\\\$\end{matrix}}\boxed{\begin{matrix}I\\\downarrow\\\%\end{matrix}}\boxed{\begin{matrix}N\\\downarrow\\6\end{matrix}}\quad\text{and}\quad\boxed{\begin{matrix}M\\\downarrow\\7\end{matrix}}\begin{matrix}O\\\downarrow\\\#\end{matrix}\;\begin{matrix}R\\\downarrow\\8\end{matrix}\;\boxed{\begin{matrix}E\\\downarrow\\@\end{matrix}}$$

Similarly,
$$\begin{array}{cccccc} R & E & M & A & I & N\\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow\\ \hline \multicolumn{1}{|c}{8} & @ & 7 & \$ & \% & \multicolumn{1}{c|}{6}\\ \hline \end{array}$$

∴ REMAIN ⇒ 8 @ 7 $ % 6

9. (*d*) As,
$$\boxed{\begin{matrix}R\\\downarrow\\\%\end{matrix}}\boxed{\begin{matrix}A\\\downarrow\\\#\end{matrix}}\begin{matrix}I\\\downarrow\\\star\end{matrix}\boxed{\begin{matrix}D\\\downarrow\\\$\end{matrix}}\quad\text{and}\quad\boxed{\begin{matrix}R\\\downarrow\\\%\end{matrix}}\;\begin{matrix}I\\\downarrow\\\star\end{matrix}\;\begin{matrix}P\\\downarrow\\@\end{matrix}\boxed{\begin{matrix}E\\\downarrow\\\copyright\end{matrix}}$$

Similarly,
$$\begin{array}{cccc} D & E & A & R\\ \downarrow & \downarrow & \downarrow & \downarrow\\ \hline \multicolumn{1}{|c}{\$} & \copyright & \# & \multicolumn{1}{c|}{\%}\\ \hline \end{array}$$

∴ DEAR ⇒ $ © # %

10. (*d*) If 'P' means #, 'A' means %, 'C' means ϕ and 'E' means @.

Then,
$$\begin{array}{ccccc} P & E & A & C & E\\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow\\ \hline \multicolumn{1}{|c}{\#} & @ & \% & \phi & \multicolumn{1}{c|}{@}\\ \hline \end{array}$$

∴ PEACE ⇒ # @ % ϕ @

11. (*d*) As,
$$\begin{array}{l} \boxed{D \longrightarrow 5}\\ \boxed{O \longrightarrow @}\\ W \longrightarrow 9\\ N \longrightarrow \# \end{array}\quad\text{and}\quad\begin{array}{l} N \longrightarrow \#\\ A \longrightarrow 6\\ \boxed{M \longrightarrow \%}\\ \boxed{E \longrightarrow 3} \end{array}$$

Similarly,
$$\begin{array}{ll} M \longrightarrow & \multicolumn{1}{|l|}{\%}\\ O \longrightarrow & \multicolumn{1}{|l|}{@}\\ D \longrightarrow & \multicolumn{1}{|l|}{5}\\ E \longrightarrow & \multicolumn{1}{|l|}{3}\\ \cline{2-2} \end{array}$$

∴ MODE ⇒ % @ 53

12. (c) As,
$$\begin{array}{l} \boxed{S \longrightarrow 5}\\ A \longrightarrow @\\ \boxed{F \longrightarrow 3}\\ \boxed{E \longrightarrow \#}\\ R \longrightarrow 2 \end{array}\quad\text{and}\quad\begin{array}{l} R \longrightarrow 2\\ I \longrightarrow \copyright\\ \boxed{D \longrightarrow \%}\\ \boxed{E \longrightarrow \#} \end{array}$$

Similarly,
$$\begin{array}{l} F \longrightarrow 3\\ E \longrightarrow \#\\ D \longrightarrow \%\\ S \longrightarrow 5 \end{array}$$

∴ FEDS → 3 # % 5

Type 7 Coding by Substitution/Word Replacement

In substitution or word replacement, a confusing code is provided by giving a different name for the word. Under this pattern, a series of words is given and each word of this series is coded with another word. Candidates are required to find out the code for a word in the given series and then provide the right information regarding the word.

Following examples will give you a better idea about the type of questions asked

***Ex* 20** If 'green' is called 'red', 'red' is called 'blue', 'blue is called white', 'white' is called 'yellow', 'yellow' is called 'violet', then what is the colour of grass?

(a) Blue	(b) Yellow
(c) Violet	(d) Red

Sol. (*d*) As, colour of grass is 'green' but here 'green' is called 'red' and hence according to the given information colour of grass must be 'red'.

***Ex* 21** If 'blue' means 'green', 'green' means 'white', 'white 'means' 'yellow', 'yellow' means 'black', 'black' means 'red' and 'red' means 'brown', then what is the colour of 'milk'? **[NIFT (UG) 2014]**

(a) Black	(b) White
(c) Yellow	(d) Green

Sol. (c) Colour of 'milk' is 'white' but here 'white' means 'yellow'. Hence, colour of 'milk' is yellow.

Practice Corner **4.7**

Build your Confidence...

1. If 'RED' is called 'GREEN', 'GREEN' is called 'YELLOW', 'YELLOW' is called 'VIOLET', 'VIOLET' is called 'BLUE',' BLUE' is called 'ORANGE', then what is the colour of 'Lady Finger'?

(a) GREEN (b) BLUE
(c) VIOLET (d) YELLOW

2. If 'DOG' is called 'COW', 'COW' is called 'LION, 'LION' is called 'BUFFALO', 'BUFFALO' is called 'OX', 'OX' is called 'CAT', then which of the following animals is wild one?

(a) DOG (b) BUFFALO
(c) LION (d) OX

3. If 'CAR' is called 'BIKE', 'BIKE' is called 'BICYCLE', 'BICYCLE' is called 'SCOOTER', 'SCOOTER' is called 'TRAIN', 'TRAIN' is called 'AEROPLANE', then which one of the following options is associated with railways?

(a) BIKE (b) TRAIN
(c) AEROPLANE (d) SCOOTER

4. If 'GREEN' is called 'BLUE', 'BLUE' is called 'WHITE', 'WHITE' is called 'RED', 'RED' is called 'VIOLET', then what is the colour of grass?

(a) WHITE (b) VIOLET (c) RED (d) BLUE

5. If 'ROAD' is called 'CAR', 'CAR' is called 'TRAIN', 'TRAIN' is called 'SCHOOL', 'SCHOOL' is called 'HOUSE', 'HOUSE' is called 'OFFICE', then where do children go to study?

[UCO Bank (Clerk) 2011]

(a) HOUSE (b) TRAIN
(c) SCHOOL (d) OFFICE
(e) None of these

6. If 'bucket' is known as 'tub', 'tub' is known as 'glass', 'glass' is known as 'saucer', 'saucer' is known as 'spoon', then which utensil will be used for drinking water?

(a) Tub (b) Saucer (c) Glass (d) Spoon

7. If 'HINDI' is called 'ENGLISH'; 'ENGLISH' is called 'URDU'; 'URDU' is called 'HISTORY'; 'HISTORY' is called 'ECONOMICS'; 'ECONOMICS' is called 'BIOLOGY', then in which subject we read the story of Mughal King Shahjahan?

(a) History (b) English
(c) Urdu (d) Economics

8. If 'blue' is called 'green', 'green' is called 'white', 'white' is called 'red', 'red' is called 'black', then what is the colour of clear sky?

(a) Blue (b) Green
(c) White (d) Black

9. If 'green' is called 'black', 'black' is called 'blue', 'blue' is called 'red', 'red' is called 'white' and 'white' is called 'orange', then what is the colour of blood?

[Punjab & Sind Bank (Clerk) 2011]

(a) Red (b) Black (c) Green (d) White
(e) None of these

10. If 'tiger' is called 'fox', 'fox' is called 'lion', 'lion' is called 'rat', 'rat' is called 'goat', 'goat' is called 'cow', then which of the following is the king of forest?

(a) Fox (b) Lion (c) Rat (d) Cow

11. If 'orange' is called 'butter', 'butter' is called 'soap', 'soap' is called 'ink', 'ink' is called 'honey' and 'honey' is called 'orange', then which of the following will be used for washing clothes?

(a) Honey (b) Butter (c) Orange (d) Ink

12. If 'blue' is called 'green', 'green' is called 'orange', 'orange' is called 'yellow', 'yellow' is called 'black', 'black' is called 'red' and 'red' is called 'white', then what is the colour of turmeric? **[SBI (PO) 2008]**

(a) Orange (b) Green (c) White (d) Black
(e) None of these

13. If 'flower' is called 'tree', 'tree' is called 'red', 'red' is called 'gold' and 'gold' is called 'white', then with which of the following items, jewellery is made? **[IBPS (PO) 2011]**

(a) Tree (b) Red (c) White (d) Flower
(e) None of these

14. If 'lion' is called 'fish', 'fish' is called 'parrot', 'parrot' is called 'rat', 'rat' is called 'cat','cat' is called 'tiger', then which of the following is a bird?

(a) Fish (b) Parrot (c) Rat (d) Tiger

15. If 'goat' is called 'cow', 'cow' is called 'lion', 'lion' is called 'ass', 'ass' is called 'rat', 'rat' is called 'cat', 'cat' is called 'dog'; then which of the following is a Rodent?

(a) Lion (b) Ass
(c) Rat (d) Cat

16. If 'football' is called 'hockey', 'hockey' is called 'badminton', 'badminton' is called 'cricket', 'cricket' is called 'tennis', 'tennis' is called 'squash' and 'squash' is called 'chess', then which game Sachin Tendulkar associated with?

(a) Squash (b) Cricket
(c) Badminton (d) Tennis

17. If 'lily' is called 'lotus', 'lotus' is called 'rose', 'rose' is called 'sunflower' and 'sunflower' is called 'marigold', then which will be the national flower of India?

(a) Lily (b) Lotus (c) Rose (d) Marigold

18. On another planet, the local terminology for 'earth', 'water', 'light', 'air' and 'sky' are 'sky', 'light', 'air', 'water' and 'earth', respectively. If someone is thirsty there, what would he drink?

(a) Light (b) Air (c) Sky (d) Water

19. If the animals which can walk are called 'swimmers', animals who crawl are called 'flying', those living in water are called 'snakes' and those which fly in the sky are called 'hunters', then what will a lizard be called?

(a) Swimmers
(b) Snakes
(c) Flying
(d) Hunters

Response & Interpretations **(4.7)**

1. (*d*) Colour of 'Lady Finger' is green but here green is called yellow. Hence, colour of 'Lady Finger' is yellow.

2. (*b*) 'Lion' is a wild animal but here 'lion' is called 'buffalo'. Hence, in this case 'buffalo' is a wild animal.

3. (*c*) 'Train' is associated with 'railways' but here train is called 'aeroplane'. Hence, in this case 'aeroplane' is associated with railways.

4. (*d*) Colour of grass is 'green' but here 'green' is called 'blue'. Hence, in this case colour of 'grass' is 'blue'.

5. (*a*) Children study in 'school' but here 'school' is called 'house'. Hence, in this case 'house' is the place where children go to study.

6. (*b*) 'Glass' is used for drinking water and here 'glass' is called as 'saucer'. Hence, in this case saucer is used for drinking 'water'.

7. (*d*) In 'History', we read the story of Shahjahan; but here History is called 'Economics'. Hence, in this case, we read about Shahjahan in **Economics.**

8. (*b*) The colour of clear sky is 'blue' but here 'blue' is called 'green'. Hence, in this case colour of clear sky is 'green'.

9. (*d*) Colour of blood is 'red' but here 'red' is called 'white'. Hence, in this case colour of blood is 'white'.

10. (*c*) The king of forest is 'lion' but here 'lion' is called 'rat'. Hence, in this case rat is the king of forest.

11. (*d*) 'Soap' is used for washing 'clothes' and here 'soap' is called 'ink'.

12. (*d*) The colour of Turmeric is 'yellow' but here, 'yellow' is called 'black'. Hence, in this case colour of turmeric is 'black'.

13. (*c*) 'Jewellery' is made of 'gold' but here 'gold' is called 'white'. Hence, in this case jewellery is made of white.

14. (*c*) 'Parrot' is a bird but here 'parrot' is called 'rat'. Hence, in this case 'rat' is a bird.

15. (*d*) Rat is a rodent but here rat is called cat. Hence, in this case cat is a rodent.

16. (*d*) Sachin Tendulkar is a cricketer but here cricket is called tennis. Hence, in this case Sachin Tendulkar is associated with tennis.

17. (*c*) We know national flower of 'India' is 'Lotus' and here 'Lotus' is called 'Rose'. Hence, in this case 'rose' is the national flower of India.

18. (*a*) 'Water' quenches thirst and here 'water' is called as 'light'. Hence, in this case 'light' quenches thirst.

19. (*c*) Lizard crawls and here 'crawl' is called 'flying'. Hence, in this case, lizard is 'flying'.

Type 8 **Fictitious Language Coding**

In this type of questions, some messages are provided in the code language and some codes are assigned to each word of the messages. The candidates are required to decipher the code of each word by finding the common code for two words and this process is followed to decipher the code for each word thereafter and hence the entire message is decoded.

Following example will give you a better idea about the type of questions asked

***Ex* 22** In a certain code language 'he is great' is written as 'ka pa ra' and 'is Ram hungry' is written as 'na sa ka'. Find the code for 'is'.

(a) na (b) sa (c) ka (d) ra

Sol. (c) he is great ⟶ ka pa ra

is Ram hungry ⟶ na sa ka

Clearly, code for 'is' = ka

➘ In the above example,
code for 'he' = pa or ra
code for 'great' = pa or ra
code for 'Ram' = na or sa
code for 'hungry' = na or sa

In place of fictious language, words can also be coded with digits (1, 2, 3, ...), letters (A, B, C, ...) or symbols (ϕ, %, +, ⇒, ...).

***Ex* 23** In a certain code language, 'po ki top ma' means 'Usha is playing cards', 'kop ja ki ma' means 'Asha is playing tennis', 'ki top sop ho' means 'they are playing football' and 'po sur kop' means 'cards and tennis'. Which word in that language means 'Asha'? **[RPSC 2013]**

(a) ja (b) ma (c) kop (d) top

Sol. (a) Po ki top $\boxed{\text{ma}}$ = Usha $\boxed{\text{is}}$ playing cards ...(i)

Kop ja ki $\boxed{\text{ma}}$ = Asha $\boxed{\text{is}}$ playing tennis ...(ii)

Ki top sop ho = they are playing football ...(iii)

po sun kop = cards and tennis ...(iv)

From Eqs. (i), (ii) and (iv), 'ja' means 'Asha'

***Ex* 24** In a certain code language,

125 = go to school 146 = Study in school 135 = Run to school

Which digit is used for 'run'? **[SSC (Steno) 2013]**

(a) 6 (b) 2 (c) 3 (d) 1

Sol. (c) ① 2 $\boxed{5}$ = Go $\boxed{\text{to}}$ school ...(i)

① 4 6 = Study in school ...(ii)

① 3 $\boxed{5}$ = Run $\boxed{\text{to}}$ school ...(iii)

From Eqs. (i) and (iii), 3 is used for run.

Practice Corner 4.8

Build your Confidence...

1. If in a certain code language 'Sachin is great' is written as 'ga ma ra', 'is he poor' is written as' 'ta sa ga', then find the code for 'is'?

(a) ta (b) ma
(c) ga (d) ra

2. If in a certain code language 'fruits are sweet' is written as 'pa ma la' and 'you are sweet' is written as 'pa ma ta', then find the code for 'fruits'.

(a) ta (b) ma
(c) pa (d) la

3. If in a certain code language 'pick and choose' is written as 'ko ho po' and 'pick up and come' is written as 'to no ko po', then how will 'pick' be written in that language? **[LIC (ADO) 2011]**

(a) ko (b) po
(c) ko or po (d) Cannot be determined
(e) None of these

4. If in a certain code language 'open the door' is written as 'ka te jo', 'door is closed' is written as 'jo pa ma' and 'this is good' is written as 'la ra pa', then how will 'closed' be written in that language? **[UTBI (Clerk) 2009]**

(a) ma (b) pa
(c) ja (d) ka
(e) None of these

5. In a certain code language, 'Sue Re Nik' means 'She is brave', 'Pi Sor Re Nik' means 'She is always smiling' and 'Sor Re Zhi' means 'Is always cheerful'. What is the code used for the word' smiling' ? **[SSC (CGL) April 2014]**

(a) Sor (b) Nik
(c) Re (d) Pi

6. If in a certain code language 'nik ka pa' means 'who are you', 'ka na ta da' means 'you may come here' and 'ho ta sa' means 'come and go', then what does 'nik' mean in that language? **[IBPS (Clerk) 2011]**

(a) who
(b) are
(c) 'who' or 'are'
(d) Data inadequate
(e) None of the above

7. If in a certain code language 'how can you go' is written as 'ja da ka pa'; 'you come here' is written as 'na ka sa' and 'come and go' is written as 'ra pa sa', then how will 'here' be written in that language? **[IOB (PO) 2010]**

(a) ja
(b) na
(c) pa
(d) Data inadequate
(e) None of the above

8. In a certain language 'pre not bis' means 'smoking is harmful', 'vog dor not' means 'avoid harmful habit', and 'dor bis yel' means 'please avoid smoking', which of the following means 'habit' in that language?

(a) vog (b) not (c) dor (d) bis

9. If in a certain code language 'where are you' is written as 'pit ka ta' and 'are they there' is written as 'sa da ka' and 'they may come' is written as 'da na ja', then how will 'there' be written in that language? **[OBC (PO) 2009]**

(a) da (b) sa
(c) ka (d) Data inadequate
(e) None of these

10. If in a certain code language 'how old are you' is written as 'ko to po ha' and 'you are very beautiful' is written as 'na po da to', then how will 'how' be written in that language? **[OBC (PO) 2010]**

(a) ko (b) ha
(c) 'ko' or 'ha' (d) Data inadequate
(e) None of these

11. If in a certain code language 'no more food' is written as 'ta ka da' and 'more than that' is written as 'sa pa ka', then how will 'that' be written in that language? **[IBPS (Clerk) 2011]**

(a) sa (b) ka
(c) sa or pa (d) Data inadequate
(e) None of these

12. If in a certain code language 'nik ma de' is written as 'he has come', 'de lit pa' is written as 'come here fast' and 'ma la se' is written as 'she has gone' then how will 'he' be written in that language? **[IOB (Clerk) 2010]**

(a) nik (b) ma
(c) de (d) cannot be determined
(e) None of these

13. If in a certain code language 'monday is a holiday' is written as 'sa da pa na' and 'they enjoy a holiday' is written as 'da na ta ka', then how will 'monday' be written in that language? **[IBPS (Clerk) 2011]**

(a) sa (b) pa
(c) 'sa' or 'pa' (d) Data inadequate
(e) None of these

14. In a certain language, 'sun shines brightly' is written as 'ba lo sul', 'houses are brightly lit' as 'kado ula ari ba' and 'light comes from sun' as 'dopi kup lo mo'. What are the codewords for 'sun' and 'brightly'?

(a) ba, sul (b) sul, lo
(c) lo, ba (d) ba, lo

15. In a certain language 'oka peru' means 'fine cloths', 'meta lisa' means 'clear water' and 'dona lisa peru' means 'fine clear weather', which word of that language means 'weather'?

(a) peru (b) oka
(c) meta (d) dona

Directions (Q. Nos. 16-20) Read the following information carefully to answer the given questions. **[IBPS (PO) 2011]**

In a certain code language 461 means 'where are you', 169 means 'you are good' and 8652 means 'flowers are not bad'.

16. What is the code for 'not'?

(a) 6 (b) 8
(c) 2 (d) 8 or 5 or 2
(e) None of these

17. What is the code for 'good'?

(a) 4 (b) 9 (c) 6 (d) 6 or 1
(e) None of these

18. How will 'where not are good flowers' be written in coded language?

(a) 68954 (b) 46598
(c) 45698 (d) Data inadequate
(e) None of these

19. How will 'are you where' be written in the coded language?

(a) 614 (b) 163 (c) 618 (d) 168
(e) Data inadequate

20. What does 59 mean?

(a) not good (b) bad are
(c) not bad (d) Data inadequate
(e) None of these

Directions (Q. Nos. 21-25) Study the following information carefully answer the given questions. **[IBPS (Clerk) 2013]**

In a certain code
'very large risk associated' is written as 'nu ta ro gi'
'risk is very low' is written as 'gi se nu mi'
'is that also associated' is written as 'ta mi po fu'
'ivnherent risk also damaging' is written as 'fu nu di yu'.
(All the codes are two letter codes only)

21. Which of the following represents 'risk also large'?
(a) nu fu po (b) nu gi ro
(c) ro po ta (d) fu nu ro
(e) ro yu fu

22. What is the code for 'very'?
(a) ta (b) fu (c) ro (d) nu
(e) gi

23. What is the code for 'associated'?
(a) mi (b) ta (c) ro (d) gi
(e) nu

24. What does the code 'di' stand for?
(a) Either 'damaging' on inherent
(b) inherent (c) also (d) low (e) risk

25. Which of the following represents 'that is low'?
(a) po mi di (b) se po mi
(c) ta mi po (d) se po nu
(e) ta mi se

Directions (Q. Nos. 26-30) Study the following information carefully to answer the given questions. **[SBI (PO) 2013]**

In a certain code language.
'economics is not money' is written as 'ka la ho ga'
'demand and supply economies' is written as 'mo ta pa ka'
'money makes only part' is written as 'zi la ne ki'
'demand makes supply economics' is written as 'zi mo ka ta'

26. What is the code for 'money' in the given code language?
(a) ga (b) mo
(c) pa (d) ta
(e) la

27. What is the code for 'supply' in the given code language?
(a) Only ta (b) Only mo
(c) Either pa or mo (d) Only pa
(e) Either mo or ta

28. What may be the possible code for 'demand only more' in the given code language?
(a) xi ne mo (b) mo zi ne
(c) ki ne mo (d) mo zi ki
(e) xi ka ta

29. What may be the possible code for 'work and money' in the given code language?
(a) pa ga la
(b) pa la lu
(c) mo la pa
(d) tu la ga
(e) pa la ne

30. What is the code for 'makes' in the given code language?
(a) mo
(b) pa
(c) ne
(d) zi
(e) ho

Response & Interpretations (4.8)

1. (c) Sachin is great → ga ma ra ...(i)
is he poor → ta sa ga ...(ii)
From Eqs. (i) and (ii),
is ⇒ ga

2. (d) fruits are sweet → pa ma la ...(i)
you are sweet → pa ma ta ...(ii)
From Eqs. (i) and (ii),
'are sweet' ⇒ pa ma
∴ fruits ⇒ la

3. (c) pick and choose → ko ho po ...(i)
pick up and come → to no ko po ...(ii)
From Eqs. (i) and (ii),
pick and ⇒ ko po
∴ pick ⇒ ko or po

4. (a) open the door → ka te jo ...(i)
door is closed → jo pa ma ...(ii)
This is good → la ra pa ...(iii)
From Eqs. (i) and (ii), door ⇒ jo
From Eqs. (ii) and (iii), is ⇒ pa
∴ closed ⇒ ma

5. (d) Sue Re Nik → She is brave ...(i)
Pi Sor Re Nik → She is always smiling ...(ii)
Sor Re Zhi → is always cheerful ...(iii)
From Eqs. (i), (ii) and (iii), code for smilling is Pi.

6. (c) nik ka pa → who are you ...(i)
ka na ta da → you may come here ...(ii)
ho ta sa → come and go ...(iii)
From Eqs. (i) and (ii),
ka ⇒ you
∴ nik ⇒ 'who' or 'are'

7. (b) how can you go → ja da ka pa ...(i)
you come here → na ka sa ...(ii)
come and go → ra pa sa ...(iii)

From Eqs. (i) and (ii), you ⇒ ka
From Eqs. (ii) and (iii), come ⇒ sa
∴ here ⇒ na

8. (*a*) pre not bis → smoking is harmful ...(i)
vog dor not → avoid harmful habit ...(ii)
dor bis yel → please avoid smoking ...(iii)
From Eqs. (i) and (ii),
harmful ⇒ not
From Eqs. (ii) and (iii),
avoid ⇒ dor
∴ habit ⇒ vog

9. (*b*) where are you → pit ka ta ...(i)
are they there → sa da ka ...(ii)
they may come → da na ja ...(iii)
From Eqs. (i) and (ii),
are ⇒ ka
From Eqs. (ii) and (iii),
they ⇒ da
∴ there ⇒ sa

10. (*c*) how old are you → ko to po ha ...(i)
you are very beautiful → na po da to ...(ii)
From Eqs. (i) and (ii),
you are ⇒ to po
∴ how ⇒ 'ko' or 'ha'

11. (*c*)
no more food → ta ka da ...(i)
more than that → sa pa ka ...(ii)
From Eqs. (i) and (ii),
more ⇒ ka.
∴ that ⇒ 'sa' or 'pa'

12. (*a*) nik ma de → he has come ...(i)
de lit pa → come here fast ...(ii)
ma la se → she has gone ...(iii)
From Eqs. (i) and (ii), come ⇒ de
From Eqs. (i) and (iii), has ⇒ ma
∴ he ⇒ nik

13. (*c*)
monday is a holiday → sa da pa na ...(i)
they enjoy a holiday → da na ta ka ...(ii)
From Eqs.(i) and (ii),
a holiday ⇒ da na
∴ monday ⇒ 'sa' or 'pa'

14. (*c*) sun shines brightly → ba lo sul ...(i)
houses are brightly lit → kado ula ari ba ...(ii)
light comes from sun → dopi kup lo mo ...(iii)
From Eqs. (i) and (ii), brightly → ba
From Eqs. (i) and (iii), sun → lo
Hence, sun → lo and brightly → ba

15. (*d*) oka peru → fine cloths ...(i)
meta lisa → clear water ...(ii)
dona lisa peru → fine clear weather ...(iii)
From Eqs. (i) and (iii), peru → fine
From Eqs. (ii) and (iii), lisa → clear
Hence, weather → dona

Solutions (Q. Nos. 16-20)

where are you → 4 6 1 ...(i)
you are good → 1 6 9 ...(ii)
flowers are not bad → 8 6 5 2 ...(iii)

From Eqs. (i), (ii) and (iii),
are ⇒ 6
From Eqs. (i) and (ii),
you ⇒ 1
∴ where ⇒ 4
good ⇒ 9
From Eq. (iii),
flowers ⇒ 8/5/2
not ⇒ 8/5/2
bad ⇒ 8/5/2

16. (*d*) According to the question,
Code for 'not' ⇒ 8 or 5 or 2

17. (*b*) According to the question,
Code for 'good' ⇒ 9

18. (*d*) Data inadequate to answer the question.
as code for 'flowers' and 'not' cannot be determined.

19. (*a*) are ⇒ 6, you ⇒ 1, where ⇒ 4
∴ are you where ⇒ 614

20. (*d*) 5 ⇒ flowers/not/bad
9 ⇒ good
Hence, code for 59 cannot be determined as data is inadequate.

Solutions (Q. Nos. 21-25) *On the basis of given information*

very large risk associated → nu ta ro gi ...(i)
risk is very low → gi se nu mi ...(ii)
is that also associated → ta mi po fu ...(iii)
inherent risk also damaging → fu nu di yu ...(iv)

From Eqs. (i) and (ii), very ⇒ gi
From Eqs. (i), (ii) and (iii), risk ⇒ nu
From Eqs. (i) and (iii), associated ⇒ ta
From Eqs. (iii) and (iv), also ⇒ fu
From Eq. (i), large ⇒ ro
From Eq. (ii), low ⇒ se
From Eqs. (ii) and (iii), is ⇒ mi
From Eq. (iii), that ⇒ po
From Eq. (iv), inherent ⇒ di/yu
damaging ⇒ di/yu

21. (*d*) risk also large → nu fu ro

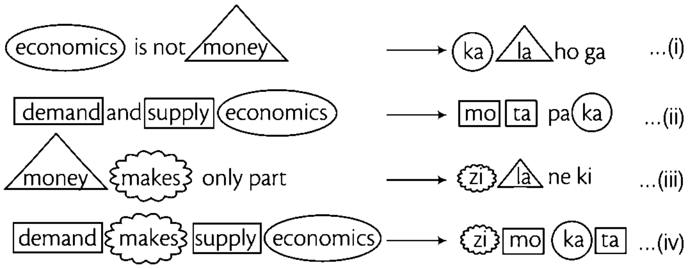
22. (*e*) very → gi

23. (*b*) associated → ta

24. (*d*) 'di' stands for either 'damaging' or 'inherent'

25. (*b*) that is low → po mi se

Solutions (Q. Nos. 26-30) *On the basis of given information*



economics is not money → ka la ho ga ...(i)
demand and supply economics → mo ta pa ka ...(ii)
money makes only part → zi la ne ki ...(iii)
demand makes supply economics → zi mo ka ta ...(iv)

From Eqs. (i), (ii) and (iv), economics ⇒ ka
From Eqs. (i) and (iii), money ⇒ la
From Eqs. (iii) and (iv), makes ⇒ zi
From Eqs. (ii) and (iv), demand ⇒ mo/ta
supply ⇒ mo/ta
From Eq. (i), is ⇒ ho/ga
not ⇒ ho/ga
From Eq. (ii), and ⇒ pa
From Eq (iii), only ⇒ ne/ki
part ⇒ ne/ki

26. (*e*) It is clear that money ⇒ la

27. (*e*) According to the question,
code for supply ⇒ 'mo' or 'ta'

28. (*a*) According to the question,
demand ⇒ mo/ta, only ⇒ ne/ki
So, according to option (a) code for 'more' will be xi.
Hence, demand only more ⇒ xi ne mo

29. (*b*) According the the question,
and ⇒ pa
money ⇒ la
In option (a) third code is 'ga', which is either for 'is' or 'not'. So, it is incorrect.
In opiton (b) third code is 'lu', which is not for any other word in question.
So, 'lu' is for 'work'.
Hence, the possible code for 'work and money' will be 'pa la lu'.

30. (*d*) It is clear that makes ⇒ zi

Type 9 Coding by Comparison

Under this pattern, some words are given in one column and their codes are given in another column. But the given codes are not in the same order of words given. Candidates are required to find out the codes of words on the basis of comparison of their properties, traits etc.

***Ex* 25** In the given table, some words are given in Column I and their codes are given in Column II. The code of the words given in Column II are not given in the order of given words. Find the corresponding codes of words and answer the following question.

Column I	Column II
BAT	dead
WIFE	dip
GREAT	sector
NATURE	training
TERMINAL	right

Find the code for the word 'GREAT'.
(a) dip (b) dead (c) right (d) sector

Sol. (c) As in Column I 'GREAT' is the only word having five letters and in Column II 'right' is the only word having five letters. Therefore, code for 'GREAT' is 'right'.

***Ex* 26** Some letters are given below in the first line and numbers are given below them in the second line. Numbers are the codes for the letters and *vice-versa*. Choose the correct number-code for the given set of alphabets.

[SSC (10+2) 2013]

C	W	E	A	Z	X	J	Y	K	L
3	9	5	7	4	8	1	0	2	6

JWXCLZ = ?

(a) 198364 (b) 198264 (c) 198354 (d) 197354

Sol. *(a)*

$$\begin{array}{cccccc} J & W & X & C & L & Z \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & 9 & 8 & 3 & 6 & 4 \end{array}$$

Practice Corner **4.9**

Build your Confidence...

1. In a certain code, following letters are coded in a certain way by assigning numbers as follows

A	D	I	L	M	N	O	R	W
1	2	3	4	5	6	7	8	9

Which word can be decoded from the following code?

163514 97842 **[SSC (FCI) 2012]**

(a) ANIMAL WORLD
(b) ANIMAL LESS WORLD
(c) WORLD OF ANIMALS
(d) ANIMALS WORLD

Directions (Q. Nos. 2-6) Read the following information to answer the questions that follow, In Column I, some words are given. In Column II, their codes are given and they are arranged in the same order in which they are in Column I but the letters in the code in Column II are not in the same order in which the letters of the words are given in Column I. Study the columns and give your answer on the basis of that. **[Delhi Police (Constable) 2010]**

Column I	Column II
(1) FLOUR	(A) xncap
(2) TAP	(B) ksd
(3) ROSE	(C) cmrn
(4) LOTUS	(D) smcpx
(5) SAIL	(E) kptm

2. Find the code for F.
(a) p (b) c
(c) a (d) x

3. Which letter is the code for P?
(a) k (b) s
(c) c (d) d

4. Find the code for L.
(a) n (b) c (c) k (d) p

5. What is the code for E?
(a) c (b) m (c) r (d) n

6. Which of the following options is the code for O?
(a) x (b) c (c) m (d) r

Directions (Q. Nos. 7-11) Read the following information to answer the questions that follow. In the following questions, two Columns I and II have been given. In Column I, few words are given and in Column II, their codes have been given using a particular rule. The order of the smaller letter have been placed in jumbled up form. You have to decode the language and choose the alternative which is equal to the letter asked in the question.

Column I	Column II
(1) DESIGN	(A) uklbjz
(2) INFORM	(B) cbxkqy
(3) MOTHER	(C) ygzwxc
(4) RIGHTS	(D) bjucgw
(5) TAILOR	(E) wcpybv
(6) GARDEN	(F) vzcjlk

7. What is the code for the letter N?
(a) u (b) k (c) c (d) g

8. What is the code for the letter F?
(a) i (b) b (c) q (d) g

9. What is the code for the letter O?
(a) y (b) k (c) v (d) c

10. What is the code for the letter S?
(a) z (b) w (c) u (d) x

11. What is the code for the letter G?
(a) i (b) p (c) b (d) j

Directions (Q. Nos. 12-19) Read the following information to answer the questions that follow. According to a code language, words in capital letters in Column I are written in small letters in Column II. The letters in Column II are jumbled up. Decode the language and choose the correct code for the word given in each question.

Column I		Column II	
(1)	CROWDY	(A)	blooppv
(2)	CRONY	(B)	jkgotv
(3)	NET	(C)	ijktv
(4)	CRUX	(D)	ikmop
(5)	ADDRESS	(E)	cjmv
(6)	SOUND	(F)	abi

12. Find the code for 'TRUE'.
(a) mvba (b) vbam (c) avmb (d) ambv

13. What is the code for 'NATURE'?
(a) ilamvb (b) ilambv (c) ilmabv (d) limabv

14. Find the code for 'SECTOR'.
(a) bpajkv (b) pbjakv (c) pbjavk (d) bpjakv

15. The code for 'TRUCE' is
(a) avmjb (b) avmbj (c) avjmb (d) vajmb

16. Which one of the following options is the code for 'DOCTOR'?
(a) jkoavk (b) okjavk (c) kojatrv (d) okjakv

17. Find the code for 'WOOD'.
(a) kogk (b) gkko
(c) gokk (d) kgok

18. Which of the following options stands for 'TODAY'?
(a) altko (b) aoktl
(c) akotl (d) akolt

19. … stands for 'ROSE'.
(a) vkpb (b) bpkv
(c) kpvb (d) vkbp

Response & Interpretations (4.9)

1. (*a*) According to given letters codes

1	6	3	5	1	4	9	7	8	4	2
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
A	N	I	M	A	L	W	O	R	L	D

Solutions (Q. Nos. 2-6)

Given that, F L O U R = x n c a p ...(i)
T A P = k s d ...(ii)
R O S E = c m r n ...(iii)
L O T U S = s m c p x ...(iv)
S A I L = k p t m ...(v)

From Eqs. (ii) and (v),

T Ⓐ P = ⓚ s d
S Ⓐ I L = ⓚ p t m

∴ A = k

From Eqs. (ii) and (iv),

Ⓣ A P = k ⓢ d
L O Ⓣ U S = ⓢ m c p x

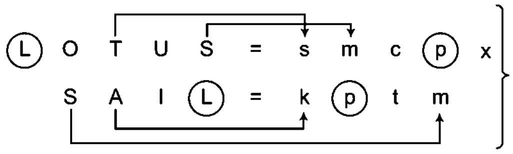
∴ T = s ⇒ P = d

From (iii) and (v),

R O Ⓢ E = c ⓜ r n
Ⓢ A I L = k p t ⓜ

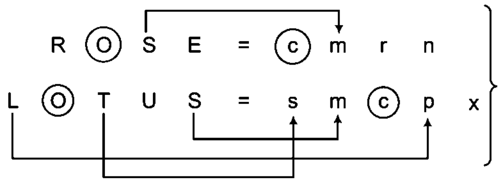
∴ S = m

From Eqs. (iv) and (v),



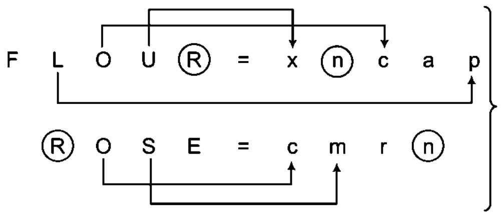
∴ L = P ⇒ I = t

From Eqs. (iii) and (iv),



∴ O = c, U = x

From Eqs. (i) and (iii),



∴ R = n, E = r, F = a

Now, as per the given information, code of each letter is as below

2. (*c*) Clearly, the code for F is a.
3. (*d*) Clearly, the code for P is d.
4. (*d*) Clearly, the code for L is p.

5. (*c*) Clearly, the code for E is r.

6. (*b*) Clearly, the code for O is c.

7. (*b*) In Statements (i) and (ii), common letters are I and N and common codes are b and k. Therefore, it is clear that IN stands for bk but not necessarily in the same order. From Statement (vi), it is clear that the word has letter N and code k is given for it. Hence, code for N is k.

8. (*c*) In the Statement (ii), it is clear that the word has letter F in it, which is not contained by any other word. Similarly, its code has letter q, which is not contained by any other code. Hence, F stands for q.

9. (*a*) From Statements (iii) and (v), it is clear that TOR = ywc. From Statement (ii), OR = yc. From Statement (vi), R = c. Hence, O = y.

10. (*c*) From Statements (i) and (iv), it is clear that SIG = ubj. From Statement (i), we have already found that I= b. Therefore, SG = uj. Now, from Statement (vi), G = j, therefore S = u.

11. (*d*) We have already found in sol.10 that G = j

Solutions (Q. Nos. 12-19)

The only 3 letter word = NET. So, its code = abi

The only 4 letter word = CRUX. So, its code = cjmv

The only 6 letter word = CROWDY. So, its code = jkgotv

The only 7 letter word = ADDRESS. So, its code = blooppv

The two five letter words are SOUND and CRONY and two codes for five letter words are ikmop and ijktv. CRONY has two common letters C and R with CRUX and the letters j and v in the code for CRUX are common with the code ijktv.

Hence, code for CRONY = ijktv

and code for SOUND = ikmop

After rearranging words and codes, we have

NET = abi ...(i)
CRUX = cjmv ...(ii)
CRONY = ijktv ...(iii)
SOUND = ikmop ...(iv)
CROWDY = jkgotv ...(v)
ADDRESS = blooppv ...(vi)

From Eqs. (i) and (iii),

Ⓝ E T = a b ⓘ
C R O Ⓝ Y = ⓘ j k t v } ∴ N = i

From Eqs.(i) and (vi),

$\boxed{N}$ Ⓔ T = a ⓑ $\boxed{i}$ } E = b
A D D R Ⓔ S S = ⓑ l o o p p v } T = a

(∵ N = i in NET)

From Eqs. (ii) and (vi),

C Ⓡ U X = c j m ⓥ
A D D Ⓡ E S S = b l o o p p ⓥ }

∴ R = v

From Eqs. (ii) and (iii),

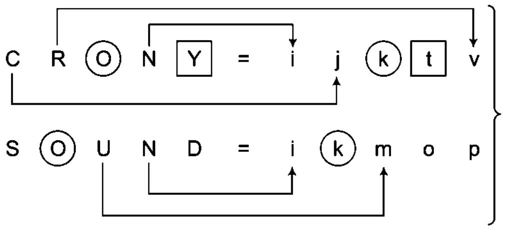
Ⓒ R U X = c ⓙ m v
Ⓒ R O N Y = i ⓙ k t v }

∴ C = j

From Eqs. (ii) and (iv),

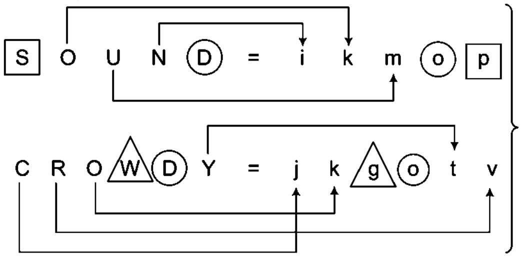
C R Ⓤ X = c j ⓜ v
S O Ⓤ N D = i k ⓜ o p } ∵ U = m
X = c

From Eqs. (iii) and (iv),



∴ O = k
Y = t

From Eqs. (iv) and (v),



∴ D = o
S = p
W = g

From Eq. (vi),

Ⓐ $\underline{D}$ $\underline{D}$ ▽R △E $\boxed{S}$ $\boxed{S}$ = △b ⓛ $\underline{o}$ $\underline{o}$ $\boxed{p}$ $\boxed{p}$ ▽v } A = l

Now, as per the given information, code of each letter is as below

Letter	A	C	D	E	N	O	R	S	T	U	W	X	Y
Code	l	j	o	b	i	k	v	p	a	m	g	c	t

12. (*c*) We have,

T R U E
↓ ↓ ↓ ↓
a v m b

∴ TRUE ⇒ avmb

13. (*a*) We have,

N A T U R E
↓ ↓ ↓ ↓ ↓ ↓
i l a m v b

∴ NATURE ⇒ ilamvb

14. (*b*) We have,

S E C T O R
↓ ↓ ↓ ↓ ↓ ↓
p b j a k v

∴ SECTOR ⇒ pbjakv

15. (*a*) We have,

T R U C E
↓ ↓ ↓ ↓ ↓
a v m j b

∴ TRUCE ⇒ avmjb

16. (*d*) We have,

$$\begin{array}{cccccc} D & O & C & T & O & R \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ o & k & j & a & k & v \end{array}$$

∴ DOCTOR ⇒ okjakv

17. (*b*) We have,

$$\begin{array}{cccc} W & O & O & D \\ \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{g} & \boxed{k} & \boxed{k} & \boxed{o} \end{array}$$

∴ WOOD ⇒ gkko

18. (*d*) We have,

$$\begin{array}{ccccc} T & O & D & A & Y \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{a} & \boxed{k} & \boxed{o} & \boxed{l} & \boxed{t} \end{array}$$

∴ TODAY ⇒ akolt

19. (*a*) We have,

$$\begin{array}{cccc} R & O & S & E \\ \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{v} & \boxed{k} & \boxed{p} & \boxed{b} \end{array}$$

∴ ROSE ⇒ vkpb

Type 10 Conditional Coding

Under this pattern, letters/numbers are given and their codes are given right under them. Candidates are required to find out code for a particular letter group/word/number according to the given conditions.

***Ex* 27** In the question below, is given a group of letters followed by four combinations of digits/symbols. You have to find out which of the combinations correctly represents the group of letters based on the following coding system and the conditions that follow and mark your answer accordingly.

Letter	M	J	R	A	D	B	W	Z	P	E	I	H	G	U	K
Digits/Symbol code	8	4	@	9	c	1	2	$	3	#	5	6	%	7	★

Conditions

(i) If both first and last letters are vowels, their codes are to be interchanged.

(ii) If the first letter is a consonant and the last letter is a vowel, both are to be coded as the code for the vowel.

(iii) If the first letter is a vowel and the last letter is a consonant, both are to be coded as the code for the consonant.

Find the code for 'IBHJRE'.

(a) #614@5 (b) 5164@% (c) %164@# (d) #164@5

Sol. (*d*) When condition is not applied, the coding is done as follows.

$$\begin{array}{cccccc} I & B & H & J & R & E \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & 1 & 6 & 4 & @ & \# \end{array}$$

But here the 1st letter (I) and the last letter (E) are vowels and therefore condition (i) is applied here. As condition (i) is applied here, I and E will interchange their codes.

∴ Code for IBHJRE ⇒ #164@5

***Ex* 28** In the question below, is given a group of numbers followed by four combinations of letters/symbols. You have to find out which of the combinations correctly represents the group of numbers based on the following coding system and the conditions that follow and mark your answer accordingly.

Digit	3	8	0	7	4	6	9	2	5	1
Code	H	$	R	A	M	%	L	K	E	@

Conditions

(i) If a number begins and ends with a non-zero odd digit, then the first and the last digits are to be coded as Y and #, respectively.

(ii) If a number begins and ends with an even digit (including zero), then the first and the last digits are to be coded as B and X, respectively.

What will be the code for 764981?

(a) A % M L $ @ (b) Y % M L $ @ (c) Y % M L $ # (d) A % M L $ #

Sol. (c) When condition is not applied, the coding is done as follows

$$\begin{array}{cccccc} 7 & 6 & 4 & 9 & 8 & 1 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ A & \% & M & L & \$ & @ \end{array}$$

But here the number begins and ends with a non-zero odd digit and therefore condition (i) is applied here. As condition (i) is applied here, 7 and 1 will be coded as Y and #, respectively.

$$\therefore \quad \begin{array}{cccccc} 7 & 6 & 4 & 9 & 8 & 1 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ Y & \% & M & L & \$ & \# \end{array}$$

∴ Code for 764981 ⇒ Y%ML$#

Practice Corner **4.10**

Build your Confidence...

Directions (Q. Nos. 1-6) In each question below, is given a group of letters followed by four combinations of digits/symbols numbered (a), (b), (c) and (d). You have to find out which of the four combinations correctly represents the group of letters based on the following coding system and the conditions that follow and mark the number of that combination as your answer. If none of the combinations correctly represents the group of letters, mark (e), i.e., 'None of these', as your answer. **[Indian Bank (PO) 2010]**

Letter	R	E	A	U	M	D	F	P	Q	I	O	H	N	W	Z	B
Digit/Symbol code	7	#	$	6	%	8	5	★	4	9	@	©	3	d	1	2

(i) If the first letter is a consonant and the third letter is a vowel, their codes are to be interchanged.
(ii) If the first letter is a vowel and the fourth letter is a consonant, both are to be coded as the code for the vowel.
(iii) If the second and the third letters are consonants, both are to be coded as the code for the third letter.

1. NABAQE
(a) 263$4# (b) 326$4# (c) 362$4# (d) 362$3#
(e) None of these

2. FWZERA
(a) 5d #7$ (b) 5dd #7$ (c) d17#$ (d) 511 #7$
(e) None of these

3. HUBDIN
(a) © 62893 (b) © 2689% (c) © 6289© (d) © 62© 9%
(e) None of these

4. EMIRDP
(a) #%978★ (b) #%9#8★ (c) 7%9#8★ (d) #9%78★
(e) None of these

5. OREDHM
(a) @7#8© % (b) #7#8© % (c) @78#© % (d) @7#@©%
(e) None of these

6. PQIMHZ
(a) ★49%©1 (b) %49★©1 (c) ★49★©1 (d) 949%©1
(e) None of these

Directions (Q. Nos. 7-11) In each of the questions below, a group of numerals is given followed by four groups of symbol / letter combinations labelled (a), (b), (c) and (d). Numerals are to be coded as per the codes and conditions given below. You have to find, out which of the combinations (a), (b), (c) and (d) is correct and indicate your answer accordingly. If none of the four combinations represents the correct code, mark (e) as your answer.

Numerals	3	5	7	4	2	6	8	1	0	9
Letter/Symbol code	★	B	E	A	@	F	K	%	R	M

(i) If the first digit, as well as the last digit is odd, both are to be coded as 'X'.
(ii) If the first digit as well as the last digit is even, both are to be coded as $.
(iii) If the last digit is 0, it is to be coded as #.

7. 546839

(a) XAFK★M (b) BAFK★M (c) XAFK★X (d) BAFK★X
(e) None of these

8. 713540

(a) E%★BA# (b) X%★BA# (c) X%★BAR (d) E%★BAR
(e) None of these

9. 765082

(a) XFBRK@ (b) EFB#K@ (c) EFBR#K (d) EFBRK@
(e) None of these

10. 487692

(a) AKEFM@ (b) $KEFM@
(c) AKEFM$ (d) $KEFM$
(e) None of these

11. 364819

(a) XFAK@M
(b) ★FAK%X
(c) ★FAK%M
(d) ★EAK%X
(e) None of the above

Directions (Q. Nos. 12-16) In each question below, is given a group of letters followed by four combinations of digits/symbols numbered (a), (b), (c) and (d). You have to find out which of the four combinations correctly represents the group of letters based on the following coding system and the conditions that follow and mark the number of that combination as your answer. If none of the combinations correctly represents the group of letters, mark (e), i.e., 'None of these', as your answer. **[Allahabad Bank (PO) 2010]**

Letter	W	P	J	Q	E	T	I	A	U	F	D	B	V	M	H
Digit/Symbol code	5	6	9	1	2	3	@	4	©	8	%	★	7	#	$

(i) If the first letter is a consonant and the fourth letter is a vowel, both are to be coded as the codes for the vowel.
(ii) If the second letter is a vowel and the last letter is a consonant, both are to be coded as 8.
(iii) If both the first and the last letter are consonants, both their codes are to be interchanged.

12. MBUVWE

(a) #★©#52 (b) 7★©#52 (c) #©★752 (d) #©★7528
(e) None of these

13. AJBMFU

(a) 49★48© (b) #9★#8© (c) 49★#8© (d) ©9©#84
(e) None of these

14. AEIMVH

(a) 42@#7$ (b) 42@47$ (c) #2@47$ (d) 48@#78
(e) None of these

15. THAFIQ

(a) 3$48@3 (b) 1$48@3
(c) 1$48@1 (d) 3$48@1
(e) None of these

16. WMEIJU

(a) @#2@9©
(b) 5#2@9©
(c) @#259©
(d) 5#259©
(e) None of the above

Directions (Q. Nos. 17-19) In each of the questions below, a group of numerals is given followed by four groups of symbol / letter combinations labelled (a), (b), (c) and (d). Numerals are to be coded as per the codes and conditions given below. You have to find out which of the combinations (a), (b), (c) and (d) is correct and indicate your answer accordingly. If none of the four combinations represents the correct code, mark (e) as your answer.

Digit	7	3	5	0	2	1	6	4	9	8
Code	N	H	L	T	F	D	R	Q	G	P

(i) If the first digit is even and the last digit is odd, they are to be coded as $ and @, respectively.
(ii) If the first digit is odd and the last digit is even, they are to be coded as # and £, respectively.
(iii) If 0 is preceded as well as followed by an odd digit, then 0 is to be coded as ↑.
(iv) If 0 is preceded as well as followed by an even digit, then 0 is to be coded as ↓.
(v) 0 is not considered as either even or odd.

17. What will be the code for 36250098?

(a) $RFLTTG£ (b) #RFLTTG@ (c) #RFLTTG£ (d) $RFLTTG@
(e) None of these

18. $QRL↑H@ could be the code for which of the following numbers?

(a) 8465032 (b) 8456037 (c) 8465034 (d) 6475031
(e) None of these

19. QLP↓RNT is the code for which of the following numbers?

(a) 6580470
(b) 4780650
(c) 6580470
(d) Data inadequate
(e) None of the above

Directions (Q. Nos. 20-25) In each question below, is given a group of letters followed by four combinations of digits/symbols numbered (a), (b), (c) and (d). You have to find out which of the four combinations correctly represents the group of letters based on the following coding system and the conditions that follow and mark the number of that combination as your answer. If none of the combinations correctly represents the group of letters, mark (e), i.e., 'None of these', as your answer. **[Punjab & Sind Bank (PO) 2010]**

Letter	B	A	D	E	F	H	J	K	M	I	U	O	W	F	P
Digit/Symbol code	6	$	7	8	#	1	2	★	%	3	©	4	9	@	5

(i) If the first letter is a vowel and the last letter is a consonant, their codes are to be interchanged.
(ii) If both the first and the last letters are consonants, both are to be coded as 'δ'.
(iii) If the first letter is a consonant and the last letter is a vowel, both are to be coded as the code for the vowel.

20. EKFUDH

(a) 8★#©78 (b) 1★#©78 (c) δ★#©78 (d) 1★#©71
(e) None of these

21. JMEIUD

(a) δ%83©δ (b) 2%83©2 (c) 7%83©7 (d) 2%83©7
(e) None of these

22. PEJDWU

(a) 58279© (b) δ8279δ (c) ©8279© (d) 582795
(e) None of these

23. DMEAKJ

(a) 7%8$★2 (b) 2%8$★7 (c) 7%8$★7 (d) δ%8$★δ
(e) None of these

24. IBHWPO

(a) 361954 (b) 461953 (c) 361953 (d) 461954
(e) None of these

25. UKPDMI

(a) ©5★7%3 (b) δ★57%δ (c) 3★57%© (d) ©★5%73
(e) None of these

Directions (Q. Nos. 26-27) In each question below, is given a group of letters followed by four combinations of digits/symbols numbered (a), (b), (c) and (d). You have to find out which of the four combinations correctly represents the group of letters based on the following coding system and the conditions that follow and mark the number of that combination as your answer. If none of the combinations correctly represents the group of letters, mark (e), i.e., 'None of these', as your answer.

Letter	E	R	C	F	L	N	H	K	P	T	A	S	G
Code	%	3	2	5	@	7	#	6	1	8	4	%	9

(i) If the first letter is a vowel and the last letter is a consonant, both are to be coded as 0.
(ii) If the first letter is a consonant and the last letter is a vowel, both are to be coded as 0.
(iii) If the first letter as well as the last letter are vowels, both are to be coded as the code of the last letter.

26. NFRSCA

(a) 753%20
(b) 053%24
(c) 0232%0
(d) 053%20

27. ARFTHE

(a) %358#%
(b) 4358#%
(c) 4358#4
(d) %385#%

Response & Interpretations **(4.10)**

1. (*e*) Here, none of the condition is applied, so the coding is done as follows.

N	A	B	A	Q	E
↓	↓	↓	↓	↓	↓
3	$	2	$	4	#

∴ Code for NABAQE ⇒ 3$2$4#

2. (*d*) When no condition is applied, the coding is done as follows.

F	W	Z	E	R	A
↓	↓	↓	↓	↓	↓
5	d	1	#	7	$

But here the second and third letters are consonants, therefore condition (iii) is applied here. As condition (iii) is applied here, both the second and third letters are to be coded as the code for the third letter.

F	W	Z	E	R	A
↓	↓	↓	↓	↓	↓
5	1	1	#	7	$

∴ Code for FWZERA ⇒ 511#7$

3. (*a*) Here, none of the condition is applied, so the coding is done as follows.

H	U	B	D	I	N
↓	↓	↓	↓	↓	↓
©	6	2	8	9	3

∴ Code for HUBDIN ⇒ ©62893

4. (*b*) When no condition is applied, the coding is done as follows.

E	M	I	R	D	P
↓	↓	↓	↓	↓	↓
#	%	9	7	8	★

But here the first letter is a vowel and the fourth letter is a consonant, therefore condition (ii) is applied.

As condition (ii) is applied here, both the first and the fourth letters are to be coded as the code for the vowel.

E	M	I	R	D	P
↓	↓	↓	↓	↓	↓
#	%	9	#	8	★

∴ Code for EMIRDP ⇒ #%9#8★

5. (*d*) When no condition is applied, the coding is done as follows.

O	R	E	D	H	M
↓	↓	↓	↓	↓	↓
@	7	#	8	©	%

But here the first letter is a vowel and the fourth letter is a consonant, therefore condition (ii) is applied. As condition (ii) is applied here, both the first and fourth letters as to be coded as the code for the vowel.

O	R	E	D	H	M
↓	↓	↓	↓	↓	↓
@	7	#	@	©	%

∴ Code for OREDHM ⇒ @7#@©%

6. (*e*) When no condition is applied, coding is done as follows.

P	Q	I	M	H	Z
↓	↓	↓	↓	↓	↓
★	4	9	%	©	1

But here the first letter is a consonant and the third letter is a vowel, therefore condition (i) is applied. As condition (i) is applied here, the codes for first and third letters are to be interchanged.

P	Q	I	M	H	Z
↓	↓	↓	↓	↓	↓
9	4	★	%	©	1

∴ Code for PQIMHZ ⇒ 94★%©1

7. (*c*) When condition is not applied, the coding is done as follows.

5	4	6	8	3	9
↓	↓	↓	↓	↓	↓
B	A	F	K	★	1

But here the first and the last digits are odd, therefore condition (i) is applied here. As condition (i) is applied here, 5 and 9 will be coded as X.

5	4	6	8	3	9
↓	↓	↓	↓	↓	↓
X	A	F	K	★	X

∴ Code for 546839 ⇒ XAFK★X

8. (*a*) When condition is not applied, the coding is done as follows.

7	1	3	5	4	0
↓	↓	↓	↓	↓	↓
E	%	★	B	A	R

But here the last digit is 0, therefore condition (iii) is applied here. As condition (iii) is applied here, 0 will be coded as #

7	1	3	5	4	0
↓	↓	↓	↓	↓	↓
E	%	★	B	A	#

∴ Code for 713540 ⇒ E%★BA#

9. (*d*) Here, none of the condition is applied, so the coding will be done as follows.

7	6	5	0	8	2
↓	↓	↓	↓	↓	↓
E	F	B	R	K	@

∴ Code for 765082 ⇒ EFBRK@

10. (*d*) When condition is not applied, the coding is done as follows.

4	8	7	6	9	2
↓	↓	↓	↓	↓	↓
A	K	E	F	M	@

But here the first and the last digits are even, therefore condition (ii) is applied here. As condition (ii) is applied here, 4 and 2 will be coded as $.

4	8	7	6	9	2
↓	↓	↓	↓	↓	↓
$	K	E	F	M	$

∴ Code for 487692 ⇒ $KEFM$

11. (*e*) When condition is not applied, the coding is done as follows.

3	6	4	8	1	9
★	F	A	K	%	M

But here the first and the last digits are odd, therefore condition (i) is applied here. As condition (i) is applied here, 3 and 9 will be coded as X.

3	6	4	8	1	9
X	F	A	K	%	X

∴ Code for 364819 ⇒ XFAK%X

12. (*e*) Here, none of the condition is applied, so the coding is done as follows.

M	B	U	V	W	E
#	★	©	7	5	2

∴ Code for MBUVWE ⇒ #★©752

13. (*c*) Here, none of the condition is applied, so the coding is done as follows.

A	J	B	M	F	U
4	9	★	#	8	©

∴ Code for AJBMFU ⇒ 49★#8©

14. (*d*) When condition is not applied, the coding is done as follows.

A	E	I	M	V	H
4	2	@	#	7	$

But here the second letter is a vowel and the last letter is a consonant, therefore condition (ii) is applied here. As condition (ii) is applied here, both the second and the last letters are to be coded as 8.

A	E	I	M	V	H
4	8	@	#	7	8

∴ Code for AEIMVH ⇒ 48@#78

15. (*b*) When condition is not applied, the coding is done as follows.

T	H	A	F	I	Q
3	$	4	8	@	1

But here both the first and the last letters are consonants, therefore condition (iii) is applied here. As condition (iii) as applied here, the codes for the first and the last letters are interchanged.

T	H	A	F	I	Q
1	$	4	8	@	3

∴ Code for THAFIQ ⇒ 1$48@3

16. (*a*) When condition is not applied, the coding is done as follows.

W	M	E	I	J	U
5	#	2	@	9	©

But here the first letter is a consonant and the fourth letter is a vowel, therefore condition (i) is applied here. As condition (i) is applied here, both the first and the fourth letters are to be coded as the codes for the vowel.

W	M	E	I	J	U
@	#	2	@	9	©

∴ Code for WMEIJU ⇒ @#2@9©

17. (*c*) When condition is not applied, the coding is done as follows.

3	6	2	5	0	0	9	8
H	R	F	L	T	T	G	P

But here the first digit is odd and the last digit is even, therefore condition (ii) is applied here. As condition (ii) is applied here, 3 is coded as # and 8 is codest as £.

3	6	2	5	0	0	9	8
#	R	F	L	T	T	G	£

∴ Code for 36250098 ⇒ #RFLTTG£

18. (*e*) Q, R, L, H are the codes for 4, 6, 5, 3 respectively. ↑ is the code for 0.

So, $QRL↑H@ shall be the code of a number of the form ?46503?, in which the first digit must be even and the last digit must be odd. Clearly, there is no such number in the given alternatives.

19. (*e*) Q, L, P, ↓, R, N and T are the codes for 4, 5, 8, 0, 6, 7 and 0 respectively. So, the required number is 4580670.

20. (*b*) When condition is not applied, the coding is done as follows

E	K	F	U	D	H
8	★	#	©	7	1

But here the first letter is a vowel and the last letter is a consonant, therefore, condition (i) is applied here. As condition (i) is applied here, the codes for the first and the last letters are interchanged.

E	K	F	U	D	H
1	★	#	©	7	8

∴ Code for EKFUDH ⇒ 1★#©78

21. (*a*) When condition is not applied, the coding is done as follows.

J	M	E	I	U	D
2	%	8	3	©	7

But here both the first and the last letters are consonants, therefore condition (ii) is applied here. As condition (ii) is applied here, both the first and the last letters are to be coded as δ.

J	M	E	I	U	D
δ	%	8	3	©	δ

∴ Code for JMEIUD ⇒ δ%83©δ

22. (*c*) When condition is not applied, the coding is done as follows.

P E J D W U
↓ ↓ ↓ ↓ ↓ ↓
5 8 2 7 9 ©

But here the first letter is a consonant and the last letter is a vowel, therefore condition (iii) is applied here. As condition (iii) is applied here, both the first and the last letters are to be coded as the code for the vowel.

P E J D W U
↓ ↓ ↓ ↓ ↓ ↓
© 8 2 7 9 ©

∴ Code for PEJDWU ⇒ ©8279©

23. (*d*) When condition is not applied, the coding is done as follows.

D M E A K J
↓ ↓ ↓ ↓ ↓ ↓
7 % 8 $ ★ 2

But here both the first and the last letters are consonants, therefore condition (ii) is applied here. As condition (ii) is applied here, both the first and the last letters are to be coded as δ.

D M E A K J
↓ ↓ ↓ ↓ ↓ ↓
δ % 8 $ ★ δ

∴ Code for DMEAKJ ⇒δ%8$★δ

24. (*a*) Here, none of the condition is applied, so the coding is done as follows.

I B H W P O
↓ ↓ ↓ ↓ ↓ ↓
3 6 1 9 5 4

∴ Code for IBHWPO ⇒ 361954

25. (*e*) Here, none of the condition is applied, so the coding is done as follows.

U K P D M I
↓ ↓ ↓ ↓ ↓ ↓
© ★ 5 7 % 3

∴ Code for UKPDMI ⇒ ©★57%3

26. (*d*) From Statement II,

N F R S C A
↓ ↓ ↓ ↓ ↓ ↓
0 5 3 % 2 0

27. (*a*) From Statement III,

If both the first and last letter are vowels, the both are coded as the last letter

A R F T H E
↓ ↓ ↓ ↓ ↓ ↓
% 3 5 8 # %

Type 11 Matrix Coding

Matrix coding is a technique/method in which letter/number/symbol is represented by one set of number/letter as given in anyone of the alternatives. The sets of letters/numbers given in the alternatives are represented by two classes of letters/numbers as in two given matrices. The columns and rows of Matrix I are numbered from 0 to 4/(A to E) and those of Matrix II from 5 to 9/ (F to J). The letters/numbers from these matrices can be represented first by its row and next by its column number/letter

A. Number to Letter Matrix

In this type of matrix, columns and rows of matrix are numbered from 0 to 4 in Matrix I and 5 to 9 in Matrix II and accordingly the letters of the given word are selected to find the assigned number from the given matrices and select the group of numbers which accompanies the letter in the right format.

Matrix I

	0	1	2	3	4
0	A	U	O	T	B
1	T	E	P	A	W
2	R	M	G	G	I
3	U	M	M	C	L

Matrix II

	5	6	7	8	9
5	P	T	A	M	E
6	G	I	O	T	M
7	E	A	L	T	M
8	R	A	B	L	T
9	N	P	E	G	P

***Ex* 29** If in the above matrices, A is represented by 00, 13 and T is represented by 56, 68, 89, then how will 'TEMPT' be denoted by the given number group?

(a) 56, 43, 32, 97, 10 (b) 89, 43, 40, 12, 44 (c) 10, 75, 32, 96, 78 (d) 78, 11, 12, 96, 10

Sol. (c) T can be denoted by 03, ⑩ , 56, 68, 78, 89

E can be denoted by 11, 43, 59, (75) , 97

M can be denoted by 21, 31, ㉜ , 58, 69, 79

P can be denoted by 12, 40, 55, (96) , 99

T can be denoted by 03, 10, 56, 68, (78) , 89

So, the number group which denotes TEMPT is 10, 75, 32, 96, 78.

B. Letter to Number Matrix

In this type of matrix, columns and rows of matrix are numbered from A to E in Matrix I and F to J in Matrix II and accordingly letters for the numbers are selected from the given matrices to find the assigned letter and select the group of letters which accompanies the number in the right format.

Matrix I

	A	B	C	D	E
A	0	2	3	4	5
B	5	3	0	2	4
C	2	5	4	3	0
D	3	0	5	4	2

Matrix II

	F	G	H	I	J
F	6	8	7	9	1
G	1	7	6	8	9
H	9	8	7	6	1
I	1	9	8	7	6
J	9	6	8	7	1

***Ex* 30** Determine the letter group in the given alternatives which correctly denotes 7 4 2 8 3 5?

(a) JI, BE, CA , HG, DA, AE
(b) GG, CC, EE, FG, BB, CE
(c) II, DD, AA, EE, BB, CC
(d) FH, AD, AC, AE, FG, AB

Sol. (*a*) 7 can be denoted by FH, GG, HH, II,(JI)

4 can be denoted by AD,(BE), CC, DD, EE

2 can be denoted by AB, BD,(CA), DE, EA

8 can be denoted by FG, GI,(HG), IH, JH

3 can be denoted by AC, BB, CD,(DA), ED

5 can be denoted by (AE) , BA, CB, DC, EC

Clearly, the letter group JI, BE, CA, HG, DA, AE correctly represents the number 742835.

C. Symbolic Matrix

In this type of matrix, columns and rows of matrix are numbered from 0 to 4 in Matrix I and 5 to 9 in Matrix II and accordingly the symbol of the symbolic code are selected from the given matrices to find the assigned number and select the group of numbers which accompanies the symbol in the right format.

Matrix I

	0	1	2	3	4
0	$	%	ε	@	✱
1	✱	$	@	%	ε
2	ε	@	✱	$	%
3	%	✱	$	@	ε

Matrix II

	5	6	7	8	9
5	#	∉	₹	¥	δ
6	δ	#	₹	∉	¥
7	¥	₹	δ	#	∉
8	₹	¥	∉	δ	#

Ex **31** Determine the correct number group from the given alternatives which denotes the symbol group ✶₹ @ ¥ $.

(a) 04, 76, 43, 59, 44 (b) 22, 67, 40, 75, 11 (c) 10, 98, 40, 23, 58 (d) 44, 99, 40, 98, 43

Sol. (*b*) ✶ can be denoted by 04, 10, ㉒, 31, 43

₹ can be denoted by 57, (67), 76, 85, 98

@ can be denoted by 03, 12, 21, 33, ㊵

¥ can be denoted by 58, 69, (75), 86, 99

$ can be denoted by 00, ⑪, 23, 32, 44

So, the symbol group ✶ ₹ @ ¥ $ can be denoted by the number group 22, 67, 40, 75, 11.

D. Jumbled Matrix

In this type of matrix, columns and rows of matrix are numbered from 0 to 4 in Matrix I and A to E in Matrix II and accordingly letter, number or symbol are to be selected from the given matrices to find the assigned number and select the group of numbers/letters which accompanies letter, number and symbol in the right format.

Matrix I

	0	1	2	3	4
0	P	✶	9	$	M
1	M	9	P	✶	$
2	$	M	✶	P	9
3	✶	P	$	9	M
4	9	$	M	✶	P

Matrix II

	A	B	C	D	E
A	1	7	@	¥	S
B	S	@	7	1	¥
C	¥	S	1	7	@
D	@	1	¥	S	7
E	7	¥	S	@	1

Ex **32** Determine the jumbled letter/number group in the given alternatives which correctly denotes 9 ¥ $ ✶ M.

(a) 24, CA, 13, 14, 04 (b) 24, 14, BE, 01, 04 (c) 11, DC, 20, 22, 10 (d) 42, 43, 41, EB, 40

Sol. (c) 9 can be denoted by 02, ⑪, 24, 33, 40

¥ can be denoted by AD, BE, CA, (DC), EB

$ can be denoted by 03, 14, ⑳, 32, 41

✶ can be denoted by 01, 13, ㉒, 30, 43

M can be denoted by 04, ⑩, 21, 34, 42

So, the correct letter/number group is 11, DC, 20, 22, 10 which represents 9 ¥ $ ✶ M.

Directions (Example Nos. 33-35) Given below are two matrices of 25 cells each containing two classes of letters. The columns and rows of Matrix I are numbered from 0 to 4 and those of Matrix II from 5 to 9. A letter from these matrices can be represented first by its row number and next by its column number. e.g., 'B' can be represented as 00, 14 etc. Similarly, M can be represented by 55, 67, etc. In each of the following examples (33-35) identify one set of number pair out of A, B, C and D which represents the given word.

Matrix I

	0	1	2	3	4
0	B	D	E	T	O
1	D	E	T	O	B
2	E	B	O	D	T
3	T	O	B	E	D

Matrix II

	5	6	7	8	9
5	M	U	I	L	R
6	U	L	M	R	I
7	I	M	R	U	L
8	L	R	U	I	M

Ex **33** RUDE

(a) 56, 65, 10, 33 (b) 59, 99, 34, 11 (c) 77, 56, 02, 01 (d) 95, 87, 42, 11

Ex **34** TRUE

(a) 24, 77, 56, 03 (b) 41, 86, 99, 23 (c) 30, 95, 87, 20 (d) 03, 58, 78, 11

Ex **35** LIME

(a) 58, 69, 76, 03 (b) 79, 88, 98, 10 (c) 97, 75, 56, 33 (d) 66, 96, 89, 02

Solutions (Example Nos. 33-35)

33. (*d*) Here, R can be denoted by 59, 68, 77, 86, (95)
U can be denoted by 56, 65, 78, (87), 99
D can be denoted by 01, 10, 23, 34, ㊷
E can be denoted by 02, ⑪, 20, 33, 44
So, the word RUDE can be denoted by the number group 95, 87, 42, 11.

34. (*c*) Here, T can be denoted by 03, 12, 24, ㉚, 41
R can be denoted by 59, 68, 77, 86, (95)
U can be denoted by 56, 65, 78, (87), 99
E can be denoted by 02, 11, ⑳, 33, 44
So, the word TRUE can be denoted by the number group 30, 95, 87, 20.

35. (*d*) Here, L can be denoted by 58, (66), 79, 85, 97
I can be denoted by 57, 69, 75, 88, (96)
M can be denoted by 55, 67, 76, (89), 98
E can be denoted by (02), 11, 20, 33, 44
So, the word LIME can be denoted by the number group 66, 96, 89, 02.

Directions (Example Nos. 36 -37) Out of the same above Matrices I and II, two cells numbers are given in the following two examples. You have to find out the words formed by the cell numbers from amongst the choices of the words given in each example.

***Ex* 36** Cell numbers : 43, 96, 30, 11
(a) DIRE (b) BILE (c) BIDE (d) BITE

***Ex* 37** Cell numbers : 86, 75, 34, 02
(a) RIDE (b) RUDE (c) LIER (d) RULE

Solutions (Example Nos. 36-37)

36. (*d*) Word formed by the cell numbers 43, 96, 30, 11 is BITE.

37. (*a*) Word formed by the cell numbers 86, 75, 34, 02 is RIDE.

Practice Corner **4.11**

Build your Confidence...

1. A word is represented by only one set of numbers as given in anyone of the alternatives. The set of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, *e.g.*, 'A' can be represented by 55, 67, 86 etc., and R can be represented by 04, 23, 30 etc. Identify the set for the word 'DOOR'. **[SSC (10+2) 2011]**

Matrix I

	0	1	2	3	4
0	F	O	M	S	R
1	S	R	F	O	M
2	O	M	S	R	F
3	R	F	O	M	S
4	M	S	R	F	O

Matrix II

	5	6	7	8	9
5	A	T	D	I	P
6	I	P	A	T	D
7	T	D	I	P	A
8	P	A	T	D	I
9	D	I	P	A	T

(a) 69, 44, 20, 43 (b) 76, 01, 44, 24 (c) 95, 20, 44, 12 (d) 57, 13, 32, 23

2. A word is represented by only one set of numbers as given in anyone of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, *e.g.*, 'A' can be represented by 01, 12, 33 etc., and 'K' can be represented by 57, 68, 85 etc. Identify the set for the word 'EAST'. **[SSC (FCI) 2012]**

Matrix I

	0	1	2	3	4
0	E	A	R	W	P
1	W	P	A	E	R
2	A	W	P	R	E
3	P	R	E	A	W
4	R	E	W	P	A

Matrix II

	5	6	7	8	9
5	S	B	K	T	C
6	B	C	T	K	S
7	T	S	C	B	K
8	K	T	S	C	B
9	C	K	B	S	T

(a) 00, 12, 76, 58
(b) 32, 34, 76, 68
(c) 41, 20, 77, 59
(d) 24, 02, 55, 76

3. A word is represented by only one set of numbers as given in anyone of the alternatives. The set of numbers given in the alternatives are represented by two classes of alphabets as in two matrices, given below. The columns and rows of Matrix I are numbered from 0 to 3 and that of Matrix II are numbered from 4 to 7. A letter from these matrices can be represented first by its row and next by its column. *e.g.*, 'A' can be represented by 00, 76 and 'S' can be represented by 11, 66. Identify the set for the word 'PUSH'. **[SSC (10+2) 2011]**

Matrix I

	0	1	2	3
0	A	D	G	H
1	P	S	V	Z
2	C	F	I	M
3	T	L	E	Q

Matrix II

	4	5	6	7
4	R	U	B	O
5	N	W	J	X
6	T	K	S	G
7	I	H	A	F

(a) 10, 66, 45, 03 (b) 30, 11, 54, 10
(c) 10, 45, 66, 75 (d) 01, 54, 66, 57

4. A word is represented by only one set of numbers as given in anyone of the alternatives. The set of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column. *e.g.*, 'A' can be represented by 02, 14, 33, etc., and K can be represented by 57, 69, 88 etc. Identify the set for the word 'SOAP'. **[SSC (Steno) 2012]**

Matrix I

	0	1	2	3	4
0	R	S	A	C	N
1	C	N	R	S	A
2	S	A	C	N	R
3	N	R	S	A	C
4	A	C	N	R	S

Matrix II

	5	6	7	8	9
5	O	B	K	E	P
6	E	P	O	B	K
7	B	K	E	P	O
8	P	O	B	K	E
9	K	E	P	O	B

(a) 13, 55, 21, 66 (b) 01, 56, 21, 67
(c) 32, 56, 20, 66 (d) 20, 56, 21, 66

5. A word is represented by only one set of numbers as given in anyone of the alternatives. The set of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, *e.g.*, 'T' can be represented by 00, 13, 30 and R can be represented by 56, 79, 87 etc. Identify the set for the word 'DEAL'. **[SSC (10+2) 2010]**

Matrix I

	0	1	2	3	4
0	T	C	K	K	G
1	F	B	R	T	O
2	M	D	I	O	Q
3	T	A	U	A	N
4	Y	K	P	R	Y

Matrix II

	5	6	7	8	9
5	C	R	I	G	E
6	P	M	S	L	T
7	E	Y	N	B	R
8	A	U	R	O	A
9	O	T	A	Q	K

(a) 11, 23, 76, 68 (b) 21, 75, 97, 68
(c) 21, 32, 86, 89 (d) 43, 75, 89, 69

6. A word is represented by only one set of numbers as given in anyone of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column. *e.g.*, 'T' can be represented by 03, 22 etc., and 'R' can be represented by 57, 68 etc. Similarly, you have to identify the set for the word 'BALD'.
[SSC (Multitasking) 2013]

Matrix I

	0	1	2	3	4
0	B	T	D	I	F
1	I	D	B	F	T
2	F	B	I	T	D
3	T	I	F	D	B
4	D	F	T	B	I

Matrix II

	5	6	7	8	9
5	A	L	R	E	K
6	K	A	L	R	E
7	E	K	A	L	R
8	R	E	K	A	L
9	L	R	E	K	A

(a) 12, 99, 65, 24 (b) 21, 88, 95, 24
(c) 43, 55, 67, 04 (d) 34, 77, 76, 42

Directions (Q. Nos. 7-11) Read the following information carefully and answer the questions given below.

A word is represented by only one set of numbers as given in anyone of the alternatives. The set of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column. *e.g.*, 'A' can be represented by 00, 12, 23 etc. and 'P' can be represented by 58, 69, 75 etc. Similarly, you have to identify the set for the word given in each question.

Matrix I

	0	1	2	3	4
0	A	R	S	N	C
1	N	C	A	R	S
2	S	N	C	A	R
3	R	S	N	C	A
4	C	A	R	S	N

Matrix II

	5	6	7	8	9
5	O	E	L	P	T
6	T	O	E	L	P
7	P	T	O	E	L
8	L	P	T	O	E
9	E	L	P	T	O

7. PAST
(a) 75, 21, 14, 65 (b) 86, 12, 31, 76
(c) 58, 41, 12, 67 (d) 88, 77, 41, 67

8. RATE
(a) 13, 12, 98, 67 (b) 42, 23, 56, 76
(c) 30, 14, 95, 89 (d) 24, 43, 89, 95

9. POET
(a) 69, 88, 67, 65 (b) 75, 56, 65, 67
(c) 77, 88, 98, 78 (d) 75, 66, 76, 78

10. NEST
(a) 32, 56, 20, 89 (b) 10, 65, 41, 76
(c) 32, 76, 34, 98 (d) 21, 67, 14, 59

11. PEST
(a) 97, 89, 34, 59
(b) 58, 67, 43, 98
(c) 57, 59, 31, 98
(d) 68, 95, 31, 76

12. A word is represented by only one set of numbers as given in anyone of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, *e.g.*, 'A' can be represented by 01, 13, etc., and 'E' can be represented by 56, 67, etc. Similarly, you have to identify the set for the word 'BOTH'. **[SSC (Steno) 2013]**

Matrix I

	0	1	2	3	4
0	F	A	N	O	I
1	I	O	F	A	N
2	A	N	O	I	F
3	O	F	I	N	A
4	N	I	A	F	O

Matrix II

	5	6	7	8	9
5	S	E	H	B	T
6	H	S	E	T	B
7	B	T	S	E	H
8	E	H	T	B	S
9	T	S	E	H	B

(a) 88, 30, 85, 86 (b) 58, 02, 68, 65
(c) 69, 67, 68, 59 (d) 75, 22, 76, 79

13. A word is represented by only one set of numbers given in anyone of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, *e.g.*, 'M' can be represented by 42, 31, etc. Similarly, you have to identify the set for the word given 'ROST'. **[SSC (CGL) April 2014]**

Matrix I

	0	1	2	3	4
4	K	L	M	N	O
3	L	M	K	O	N
2	N	O	L	M	K
1	M	N	O	K	L
0	O	K	N	L	M

Matrix II

	5	6	7	8	9
9	P	Q	R	S	T
8	T	S	Q	P	R
7	R	T	S	Q	P
6	S	P	T	R	Q
5	Q	R	P	T	S

(a) 68, 33, 65, 58
(b) 56, 44, 67, 40
(c) 97, 21, 66, 29
(d) 75, 00, 10, 92

14. A word is represented by only one set of numbers as given in anyone of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in the two matrices given below. The columns and rows of matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, *e.g.*, 'E' can be represented by 00, 13, 32, etc., and 'S' can represented by 55, 76, 87, etc. Similarly, you have to identify the set for the word given CART. **[SSC (Multitasking) 2014]**

Matrix I

	0	1	2	3	4
0	E	A	R	W	P
1	W	P	A	E	R
2	A	W	P	R	E
3	P	R	E	A	W
4	R	E	W	P	A

Matrix II

	5	6	7	8	9
5	S	B	K	T	C
6	B	C	T	K	S
7	T	S	C	B	K
8	K	T	S	C	B
9	C	K	B	S	T

(a) 65, 33, 40, 86
(b) 66, 12, 40, 58
(c) 88, 44, 31, 89
(d) 59, 20, 32, 89

15. A word is represented by only one set of numbers as given in anyone of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, *e.g.*, 'H' can be represented by 02, 20, 43 etc., and 'V' can be represented by 58, 79, 95 etc. Similarly, you have to identify the set for the word given SOFT. **[SSC (Multitasking) 2014]**

Matrix I

	0	1	2	3	4
0	F	G	H	O	M
1	O	M	F	G	H
2	H	O	M	F	G
3	G	H	O	M	F
4	M	F	G	H	O

Matrix II

	5	6	7	8	9
5	S	T	U	V	W
6	U	V	W	S	T
7	W	S	T	U	V
8	T	U	V	W	S
9	V	W	S	T	U

(a) 55, 03, 22, 77
(b) 89, 32, 12, 97
(c) 68, 11, 12, 97
(d) 89, 03, 12, 98

Directions (Q. Nos. 16-19) Read the following information carefully and answer the questions given below.

A word is represented by only one set of numbers as given in anyone of the alternatives. The set of numbers given in the alternatives are represented by two classes of alphabets as in the two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II from 5 to 9. A letter can be represented first by its row and next by its column number. *e.g.,* 'N' can be represented by 02, 21, etc. 'O' can be represented by 65, 96 etc. Similarly, you have to identify the correct set for the word given in each question.

Matrix I

	0	1	2	3	4
0	P	W	N	I	S
1	I	S	P	W	N
2	W	N	I	S	P
3	S	P	W	N	I
4	N	I	S	P	W

Matrix II

	5	6	7	8	9
5	A	E	R	O	H
6	O	H	A	E	R
7	E	R	O	H	A
8	H	A	E	R	O
9	R	O	H	A	E

16. PENS
(a) 12, 67, 21, 30
(b) 43, 56, 13, 23
(c) 43, 56, 21, 42
(d) 31, 57, 21, 42

17. HIPS
(a) 85, 41, 24, 11
(b) 66, 21, 24, 11
(c) 67, 41, 24, 42
(d) 78, 34, 23, 04

18. SORROW
(a) 23, 86, 69, 88, 65, 33
(b) 23, 43, 14, 33, 65, 78
(c) 11, 66, 69, 65, 59, 97
(d) 42, 65, 95, 88, 77, 44

19. WEAR
(a) 44, 68, 67, 87
(b) 44, 87, 98, 69
(c) 20, 86, 67, 87
(d) 32, 87, 78, 95

Directions (Q. Nos. 20-23) Read the following information carefully and answer the questions given below.

A word is represented by only one set of numbers as given in anyone of the alternatives. The set of numbers given in the alternatives are represented by two classes of alphabets as in the 2 matrices given below. The columns and rows of Matrix I are from 0 to 4 and that of Matrix II from 5 to 9. A letter can be represented first by its row and next by its column number. *e.g.,* 'C' can be represented by 02, 21, etc. 'T' can be represented by 65, 96 etc. Similarly, you have to identify the correct set for the word given in each question.

Matrix I

	0	1	2	3	4
0	D	V	C	P	M
1	P	M	D	V	C
2	V	C	P	M	D
3	M	D	V	C	P
4	C	P	M	D	V

Matrix II

	5	6	7	8	9
5	S	A	U	T	J
6	T	J	S	A	U
7	A	U	T	J	S
8	J	S	A	U	T
9	U	T	J	S	A

20. DUST
(a) 00, 76, 86, 59
(b) 13, 76, 98, 89
(c) 21, 69, 55, 65
(d) 12, 57, 67, 58

21. CAMP
(a) 02, 57, 04, 34
(b) 14, 68, 42, 34
(c) 21, 75, 11, 41
(d) 40, 99, 42, 12

22. PUMP
(a) 03, 69, 03, 54
(b) 41, 88, 23, 02
(c) 10, 57, 23, 34
(d) 22, 95, 43, 41

23. PAST
(a) 10, 56, 41, 58
(b) 22, 68, 55, 66
(c) 34, 75, 67, 58
(d) 41, 99, 98, 88

Directions (Q. Nos. 24-26) Read the following information carefully and answer the questions given below.

In the given matrices, a letter can be represented first by its row number and followed by its column number. *e.g.,* 'A' is represented by 12, 24 and 'R' by 57, 76 etc. In each of the questions following matrices, identify one set of number pairs out of (a, b, c, d) which represents the given word.

Matrix I

	0	1	2	3	4
0	A	E	S	T	H
1	T	H	A	E	S
2	E	S	T	H	A
3	H	A	E	S	T

Matrix II

	5	6	7	8	9
5	P	O	R	K	L
6	K	L	P	O	R
7	O	R	K	L	P
8	L	P	O	R	K
9	R	K	L	P	O

24. EAST
(a) 32, 31, 02, 04 (b) 20, 43, 33, 11
(c) 13, 12, 14, 10 (d) 44, 32, 21, 03

25. LAKE
(a) 85, 31, 77, 44 (b) 97, 00, 77, 12
(c) 66, 12, 58, 40 (d) 77, 43, 76, 31

26. ROSE
(a) 86, 67, 33, 44
(b) 88, 76, 31, 32
(c) 95, 75, 02, 32
(d) 57, 87, 32, 33

Response & Interpretations (4.11)

1. (*d*) According to the matrices,
D — (57), 69, 76, 88, 95
O — 01, ⑬, 20, ㉜, 44
R — 04, 11, ㉓, 30, 42
DOOR ⇒ 57, 13, 32, 23

2. (*a*) According to the matrices,
E — (00), 13, 24, 32, 41
A — 01, ⑫, 20, 33, 44
S — 55, 69, (76), 87, 98
T — (58), 67, 75, 86, 99
∴ EAST ⇒ 00, 12, 76, 58.

3. (*c*) According to the matrices,
P — ⑩
U — ㊺
S — 11, (66)
H — 03, (75)
∴ PUSH ⇒ 10, 45, 66, 75.

4. (*a*) According to the matrices,
S — 01, ⑬, 20, 32, 44
O — (55), 67, 79, 86, 98
A — 02, 14, ㉑, 33, 40
P — 59, (66), 78, 85, 97
∴ SOAP ⇒ 13, 55 21, 66.

5. (*b*) According to the matrices,
D — ㉑
E — 59, (75)
A — 31, 33, 85, 89, (97)
L — (68)
∴ DEAL ⇒ 21, 75, 97, 68

6. (*b*) According to the matrices,
B — 00, 12, ㉑, 34, 43
L — 56, 67, 78, 89, (95)
A — 55, 66, 77, (88), 99
D — 02, 11, ㉔, 33, 40
∴ BALD ⇒ 21, 88, 95, 24

7. (*b*) According to the matrices,
P — 58, 69, 75, (86), 97
A — 00, ⑫, 23, 34, 41
S — 02, 14, 20, ㉛, 43
T — 59, 65, (76), 87, 98
∴ PAST ⇒ 86, 12, 31, 76

8. (*a*) According to the matrices,
R — 01, ⑬, 24, 30, 42
A — 00, ⑫, 23, 34, 41
T — 59, 65, 76, 87, (98)
E — 56, (67), 78, 89, 95
∴ RATE ⇒ 13, 12, 98, 67

9. (*a*) According to the matrices,
P — 58, (69), 75, 86, 97
O — 55, 66, 77, (88), 99
E — 56, (67), 78, 89, 95
T — 59, (65), 76, 87, 98
∴ POET ⇒ 69, 88, 67, 65

10. (*d*) Accordiong to the matrices,
N — 03, 10, ㉑, 32, 44
E — 56, (67), 78, 89, 95
S — 02, ⑭, 20, 31, 43
T — (59), 65, 76, 87, 98
∴ NEST ⇒ 21, 67, 14, 59

11. (*b*) According to the matrices,
P —(58), 69, 75, 86, 97
E — 56,(67), 78, 89. 95
S — 02, 14, 20, 31, ㊸
T — 59, 65, 76, 87, (98)
∴ PEST ⇒ 58, 67, 43, 98

12. (*d*) According to the matrices,
B — 58, 69,(75), 88, 99
O — 03, 11,㉒, 30, 44
T — 59, 68,(76), 87, 95
H — 57, 65,(79), 86 , 98
∴ BOTH ⇒ 75, 22, 76, 79

13. (*a*) According to the matrices,
R — 97, 89, 75,(68) 56
O — 44,㉝, 21 , 12, 00
S — 98, 86, 77,(65), 59
T — 99, 85, 76, 67 ,(58)
∴ ROST ⇒ 68, 33, 65, 58

14. (*b*) According to the matrices,
C — 59,(66), 77, 88, 95
A — 01,⑫, 20, 33, 44
R — 02, 14, 23, 31,㊵
T —(58), 67, 75, 86, 89
∴ CART ⇒ 66, 12, 40, 58

15. (*d*) According to the matrices,
S — 55, 68, 76 ,(89), 97
O —(03), 10, 21, 32, 44
F — 00,⑫, 23, 34, 41
T — 56, 69, 77, 85,(98)
∴ SOFT ⇒ 89, 03, 12, 98

16. (*c*) According to the matrices,
P — 00, 12, 24, 31, ㊸
E — (56), 68, 75, 87, 99
N — 02, 14,㉑, 33, 40
S — 04, 11, 23, 30, ㊷
∴ PENS ⇒ 43, 56, 21, 42

17. (*a*) According to the matrices,
H — 59, 66, 78, (85), 97
I — 03, 10, 22, 34, ㊶
P — 00, 12,㉔, 31, 43
S — 04,⑪, 23, 30, 42
∴ HIPS ⇒ 85, 41, 24, 11

18. (*d*) According to the matrices,
S — 04, 11, 23, 30, ㊷
O — 58,(65),(77), 89, 96
R — 57, 69, 76,(88), (95)
W — 01, 13, 20 32, ㊹
∴ SORROW ⇒ 42, 65, 95, 88, 77, 44

19. (*b*) According to the matrices,
W — 01, 13, 20, 32, ㊹
E — 56, 68, 75,(87), 99
A — 55, 67, 79, 86, (98)
R — 57,(69), 76, 88, 95
∴ WEAR ⇒ 44, 87, 98, 69

20. (*d*) According to the matrices,
D — 00,⑫, 24, 31, 43
U —(57), 69, 76, 88, 95
S — 55,(67), 79, 86, 98
T— (58), 65, 77, 89, 96
∴ DUST ⇒ 12, 57, 67, 58

21. (*b*) According to the matrices,
C — 02,⑭, 21, 33, 40
A — 56,(68), 75, 87, 99
M — 04, 11, 23, 30, ㊷
P — 03, 10, 22,㉞, 41
∴ CAMP ⇒ 14, 68, 42, 34

22. (*c*) According to the matrices,
P — 03,⑩, 22, 34, 41
U — (57), 69, 76, 88, 95
M — 04, 11,㉓, 30, 42
P — 03, 10, 22,㉞, 41
∴ PUMP ⇒ 10, 57, 23, 34

23. (*c*) According to the matrices,
P — 03, 10, 22,㉞, 41
A — 56, 68,(75), 87, 99
S — 55,(67), 79, 86, 98
T —(58), 65, 77, 89, 96
∴ PAST ⇒ 34, 75, 67, 58

24. (*c*) According to the matrices,
E — 01,⑬, 20, 32, 44
A — 00,⑫, 24, 31, 43
S — 02,⑭, 21, 33, 40
T — 03,⑩, 22, 34, 41
∴ EAST ⇒ 13, 12, 14, 10

25. (*a*) According to the matrices,
L — 59, 66, 78,(85), 97
A — 00, 12, 24,㉛, 43
K — 58, 65,(77), 89, 96
E — 01, 13, 20, 32, ㊹
∴ LAKE ⇒ 85, 31, 77, 44

26. (*c*) According to the matrices,
R — 57, 69, 76, 88, (95)
O — 56, 68,(75), 87, 99
S — (02), 14, 21, 33, 40
E — 01, 13, 20,㉜, 44
∴ ROSE ⇒ 95, 75, 02, 32

Master Exercise

Take a Leap...

1. If 'PARK' is coded as '5394', 'SHIRT' is coded as '17698' and 'PANDIT' is coded as '532068', how would you code 'NISHAR' in that code language?

(a) 266734 (b) 231954 (c) 201739 (d) 261739

2. If in a certain code language, '0' is written as 'E', 'A' as 'C', 'M' as 'I', 'S' as '0', 'N' as 'P', 'E' as 'M', 'I' as 'A', 'P' as 'N' and 'C' as 'S', then how will 'COMPANIES' be written in that code language? **[Corporation Bank (PO) 2010]**

(a) SEIACPAMO (b) SMINCPAMO
(c) SEINCPAMO (d) SEINCPMIO
(e) None of these

3. In a certain code language 'TREAD' is written as '7%#94' and 'PREY' is written as '$%#8'. How is 'ARTERY' written in that code?

(a) 9#7%#8 (b) 9#%7#8
(c) 9%7#%8 (d) 9%#7%8

4. If '6' is coded as 'T', '8' is coded as 'I', '3' is coded as 'N', '9' is coded as 'Q', '2' is coded as 'Y', '5' is coded as 'D' and '7' is coded as 'R', then what is the uncoded form of 'DRINTQ'? **[Allahabad Bank (PO) 2010]**

(a) 573869 (b) 578396 (c) 576839 (d) 578329
(e) None of these

5. If in a certain coded language, UNCLE is written as 94672, SISTER is written as 535821 and SON is written as 584, then what will be the code of NOISE in that coded language?

(a) 64825 (b) 84652 (c) 46356 (d) 48352

6. In a certain code language 'TRAIN' is written as '39★7%' and 'MEAL' is written as '4$★@'. How is 'REAM' written in that code language? **[Hotel Mgmt 2012]**

(a) 3$♪9 (b) 74 $ 9 (c) 4*$ 9 (d) 9 $♪4

7. In a certain code language 'BEAUTIFUL' is coded as '573041208', 'BUTTER' as '504479'. How is 'FUTURE' coded in that code language? **[SNAP 2010]**

(a) 201497 (b) 204097 (c) 704092 (d) 204079

8. In a certain code MOAN is written as 5%3$ and NEWS is written as $1@8. How is SOME written in that code? **[KMAT 2011]**

(a) 8 % 51 (b) 85 % 8 (c) 8 @ 51 (d) 8 % 31

9. In a certain code language 'BASKET' is written as '5$3%#1' and 'TRIED' is written as '14★#2'. How is 'SKIRT' written in that code language? **[IBPS (PO) 2012]**

(a) 3%★41 (b) 3★%41 (c) 3% #41 (d) 3#4%1
(e) None of these

10. In a certain code language 'ROAM' is written as '5913' and 'DONE' is written as '4962'. How is 'MEAN' written in that code language? **[PNB (PO) 2009]**

(a) 5216 (b) 3126
(c) 3216 (d) 9126
(e) None of these

11. In a certain code language 'DINE' is writtten as '1537' and 'WORTH' is written as '$#96@'. How is 'WITHER' written in that code lanugage? **[IRMA 2009]**

(a) $5@679 (b) $567@9
(c) $56@79 (d) $56@97

12. In a certain code language 'ROPE' is written as '%57$', 'DOUBT' is written as '35#8★' and 'LIVE' is written as '@24$'. How is 'TROUBLE' written in that code language? **[BOI (PO) 2008]**

(a) ★%5#8@$ (b) ★%#58@$
(c) ★%5#8@4 (d) ★%#58$@
(e) None of these

13. If 'GERMAN' is coded as 126534, 'FOOD' is called as 9770 and CORN is coded as 8T64, then what will be the code for 'FRANCE'?

(a) 961063 (b) 963482
(c) 963428 (d) 964382

14. If 'LION' is called 'TIGER', 'TIGER is called 'DOG' 'DOG' is called 'ASS', 'ASS' is called 'BIRD', 'BIRD' is called 'CUP', 'CUP' is called 'PLATE', then which of the following does fly in the sky?

(a) ASS (b) LION
(c) CUP (d) BIRD

15. If 'PARROT' is called 'SPARROW', 'SPARROW' is called 'CROW', 'CROW' is called 'DUCK', 'DUCK' is called 'COW ', 'COW' is called 'PIGEON' and 'PIGEON' is called 'CUCKOO', then which of the following has four legs?

(a) COW (b) PIGEON
(c) CUCKOO (d) DUCK

16. If 'DOG' is called 'CAT', 'CAT' is called 'FOX', 'FOX' is called 'SNAKE', 'SNAKE' is called 'MONKEY'; 'MONKEY' is called 'OX' and 'OX' is called 'HORSE', then which of the following is a reptile?

(a) FOX (b) SNAKE (c) MONKEY (d) OX

17. If 'water' is called 'food', 'food' is called 'tree', 'tree' is called 'sky', 'sky' is called 'wall', on which of the following does a 'fruet' grow? **[SNAP 2012]**

(a) Water (b) Food (c) Tree (d) Sky

18. If 'TELEVISION' is called 'CALCULATER', 'CALCULATER' is called 'PEN', 'PEN' is called 'BOOK', 'BOOK' is called 'PILLOW', 'PILLOW' is called 'BED', then what do we use to write?

(a) CALCULATER (b) PEN
(c) BOOK (d) PILLOW

19. If 'RAT' is called 'CAT', 'CAT' is called 'DOG', 'DOG' is called 'LION', 'LION' is called 'COW', 'COW' is called 'FOX', 'FOX' is called 'ASS', then which of the following animal roars?

(a) FOX (b) LION (c) CAT (d) COW

20. If 'BLACK' means 'PINK', 'PINK' means 'BLUE', 'BLUE' means 'WHITE', 'WHITE' means 'YELLOW', 'YELLOW' means 'RED' and 'RED' means 'BROWN'. Then, what is the colour of clear sky? **[IRMA 2009]**

(a) Blue (b) Pink (c) White (d) Brown

21. If 'Star' is called 'Planet', 'Planet' is called 'Satellite', 'Satellite' is called 'Galaxy', 'Galaxy' is called 'Comet', then 'Earth' is classified under which category? **[Allahabad Bank (PO) 2008]**

(a) Galaxy (b) Comet (c) Planet (d) Star
(e) Satellite

22. If 'milk' is called 'curd', 'curd' is called 'salt', 'salt' is called 'sugar', 'sugar' is called 'water', then what is used to mean tea sweet?

(a) salt (b) curd
(c) sugar (d) water

23. If 'bread' is called 'rice', 'rice' is called 'egg', 'egg' is called 'aeroplance', 'aeroplane' is called 'car', car is called 'bike', then which of the vehicle has four wheels? **[Hotel Mgmt 2012]**

(a) egg (b) aeroplane
(c) bike (d) rice

24. If in a certain code language 'TORCH' is coded as 'GLIXS', how would you code 'MANUAL' in the same language?

(a) CBFMZN (b) OZEOZN
(c) OZFMZN (d) NZMFZO

25. If 'CHAMBER' is coded as 'XSZNYVI', how will coded word 'WLFYOV' relate to the basic word through that coding language?

(a) DOVBLE (b) DOUCLF
(c) DLUBOE (d) DOUBLE

26. If in a certain code language 'TROUP' is written as 'VPQSR', then how will 'SIGHT' be written in that language?

(a) UGVIF (b) UIGVF (c) UGIVF (d) UGIFV

27. If in a certain code language 'MANUAL' is coded as '1311421112', 'TRIANGLE' is coded as '201891147125', then how will 'FIVE' be coded in that language?

(a) 65229 (b) 69225 (c) 62925 (d) 62295

28. If in a certain code language 'GOOD' is coded as '20121223', 'ONE' is coded as '121322', then how will 'FRUIT' be coded in that language?

(a) 2196187 (b) 2196178
(c) 2198167 (d) 2169187

29. In a certain code language '123' stands for 'I am servant', '279' stands for 'servant always miserable', and '684' stands for 'poverty is curse'. Then, 'miserable' stands for which numeric?

(a) 2 (b) 7
(c) 9 (d) Cannot be determined

30. In a certain code language, '493' means 'Friendship Big Challenge', '961' means 'Struggle Big Exam' and '178' means 'Exam Confidential Subject'. What does 'Confidential' stand for?

(a) 7 or 8 (b) 7 or 9 (c) 8 (d) 8 or 1

31. In a code language '157' means 'mother always lovable', '619' means 'always happy future' and '952' means 'mother very happy'. What does the word 'future' stand for in the same language?

(a) 9 (b) 6
(c) 1 (d) Cannot be determined

Directions (Q. Nos. 32-34) Study the following statements A, B, C, D and E and then answer the questions that follow.

A. 1, 5, 9 means : 'you better go'
B. 1, 6, 7 means : 'better come here'
C. 5, 6, 7 means : 'you come here'
D. 1, 5, 6 means : 'better you here'
E. 3, 7, 9 means : 'come and go'

32. Which of the following groups of minimum statements are necessary to find the code number of 'better'?

(a) A and B (b) D and E (c) C and E (d) B and E

33. Which numeral means 'and'?

(a) 6 (b) 9 (c) 3 (d) 7

34. Which numeral is used for 'go'?
(a) 9
(b) 5
(c) 7
(d) Cannot be determined

35. If $\boxed{C}\boxed{P}\boxed{I}$ is $\boxed{D}\boxed{M}\boxed{K}$, then which of the following would be $\boxed{B}\boxed{J}\boxed{P}$? **[UP PSC 2013]**
(a) $\boxed{G}\boxed{C}\boxed{S}$
(b) $\boxed{C}\boxed{G}\boxed{R}$
(c) $\boxed{C}\boxed{R}\boxed{G}$
(d) $\boxed{C}\boxed{S}\boxed{F}$

Directions (Q. Nos. 36-38) Study the following information carefully to answer the given questions.

'time and money' is written as 'ma jo ki',
'manage time well' is written as 'pa ru jo,
'earn more money' is written as 'zi ha ma' and
'earn well enough' is written as 'si ru ha'.

36. What is the code for 'earn'?
(a) si
(b) ru
(c) ha
(d) ma

37. Which of the following represents more time?
(a) pa jo
(b) zi ki
(c) ma ki
(d) jo zi

38. What is the code for 'manage'?
(a) ru
(b) pa
(c) jo
(d) ha

39. In a certain code language 'GROWTH' is written as 'HQPVUG' and 'FOUR' is written as 'GNVQ'. How is 'PROBLEMS' written in that code language? **[Corporation Bank (PO) 2009]**
(a) OQPAMDNR
(b) QQNCMDNR
(c) QQPAKDNR
(d) QQPAMDNR
(e) None of these

40. In a certain code language 'FORGET' is written as 'DPPHCU'. How would 'DOCTOR' be written in that code language? **[MAT 2006]**
(a) BPAUMS
(b) BPAUPS
(c) EMDRPP
(d) BPARPP

41. If DEMOCRATIC is written as EDMORCATCI, how CONTINUOUS will be written in the same code? **[CG PSC 2013]**
(a) OCTNNIOUSU
(b) OTCNINUOUS
(c) OCNTNIUOSU
(d) CONNITUOSU

42. In a certain code language 'what else can you do for me. Mr Ajay' is written' as 'you Mr what can Ajay else do me for'. How will 'anyone else who can do such favour to me' be written in that code language? **[Corporation Bank (PO) 2008]**
(a) Can to who anyone me else do favour such
(b) Can favour anyone who me else do to such
(c) Can to anyone who me else do such favour
(d) Can to anyone who me do else favour such
(e) None of the above

43. In a certain code language '975' means 'throw away garbage', '528' means 'give away smoking' and '213' means 'smoking is harmful'. Which digit in that code language means 'smoking'? **[MAT 2009]**
(a) 5
(b) 8
(c) 2
(d) 3

44. In a certain code language, 'nee muk pic' means 'grave and concern', 'ill dic so' means 'every body else' and 'tur muk so' means 'body and soul'. Which of the following would mean 'every concern'? **[MAT 2008]**
(a) dic pic
(b) pic nee
(c) ill nee
(d) Cannot be determined

45. In a certain code language 'pick and choose' is written as 'ko ho po' and 'pick up and come' is written as 'to no ko po'. How is 'pick' written in that code language? **[Central Bank (PO) 2007]**
(a) ko
(b) po
(c) Either ko or po
(d) Cannot be determined
(e) None of these

46. 165135 is to 'PEACE' as 1215225 is to **[IB (ACIO) 2013]**
(a) LEAD
(b) LOVE
(c) LOOP
(d) AURA

47. In a certain code language 'DESCRIBE' is written as 'FCJSDTFE'. How will 'CONSIDER' be written in that code language? **[MHA-CET 2009]**
(a) SFEJTOPD
(b) SEFJTOPD
(c) QFETJOPD
(d) QEFJTOPD

48. If 'CLOSE' is coded as DNRWJ', then 'APART will be coded as **[JMET 2009]**
(a) BRDVY
(b) BRBVY
(c) BSKYV
(d) BTDYV

49. If the word 'LEADER' is coded as 20-13-9-12-13-26, how would you write 'LIGHT'? **[SSC (CGL) 2013]**
(a) 20-16-17-15-27
(b) 20-15-16-18-23
(c) 20-17-15-16-28
(d) 20-16-15-17-22

50. In a certain code language 'how many books' is written as 'sa da na' and 'many more days' is written as 'ka pa da'. How is 'books' written in that code language? **[KMAT 2011]**
(a) sa
(b) na
(c) sa or na
(d) Data inadequate

51. If code for 'NATURE' = 'MZGFIV', then code for 'ANSWER' = ?
(a) MZHDVI
(b) ZMHDVI
(c) IVDHMZ
(d) HMZDVI

52. If 'RATIONAL' is coded as 'UDWLRQDO', then 'NORM' will be coded as
(a) QUPR
(b) QRPU
(c) QRUP
(d) PURQ

53. If code for 'TREND' = '20185144', then code for 'SMART' = ?

(a) 201913118 (b) 191318120
(c) 193111820 (d) 191311820

54. In a certain code 'CONFIGURE' is written as 'GUREIFNOC'. How is 'ADVERTISE' written in that code? **[NMAT 2008]**

(a) TISERADVE (b) TISEREVDA
(c) ESITRADVE (d) ESITREVDA

55. A word is represented by only one set of numbers as given in anyone of the alternatives. The sets of numbers given the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, *e.g.,* 'N' can be represented by 02, 24 *etc.*, and 'Q' can be represented by 56, 78 etc. Similarly, you have to identify the set for the word 'SPORTS'. **[SSC (CPO) 2012]**

Matrix I

	0	1	2	3	4
0	L	M	N	O	K
1	N	M	K	L	O
2	L	K	M	O	N
3	N	O	K	M	L
4	O	M	K	L	N

Matrix II

	5	6	7	8	9
5	P	Q	R	S	T
6	Q	P	S	R	T
7	T	R	P	Q	S
8	R	P	S	Q	T
9	Q	P	S	R	T

(a) 24, 66, 40, 85, 89, 58 (b) 87, 20, 23, 85, 75, 67
(c) 67, 55, 31, 57, 69, 87 (d) 58, 77, 20, 85, 79, 97

56. If 'SYNDICATE' is written as 'SYTENDCAI', then how can 'PSYCHOTIC' be written? **[SSC (10+2) 2013]**

(a) PSYICTCOH (b) PSYCOHTCI
(c) PSICYOCTH (d) PSICYCOTH

57. If the code for 'KAMAL' = '1626142615', then find the code for 'NO'.

(a) 1312 (b) 13125
(c) 1213 (d) 192406

58. If 'NINE' is coded as 'OMJHOMFD', then 'LOT' is coded as

(a) MKPNUS (b) KMPNUS
(c) MKNPUS (d) MKPNSU

59. In a particular code, 'IUIJT' means 'GREEN'. What does XLSQKA mean in the same code? **[NIFT (UG) 2012]**

(a) VIOLET (b) ORANGE
(c) INDIGO (d) PURPLE

60. If in a certain code language 'GAP' is written as 'FHZBOQ', 'NET' is written as 'MODFSU', then how will 'TONE' be written in that language?

(a) SUNPMODF (b) SUNPMOFD
(c) SUNPOMDF (d) SNUPOMDF

61. If code for 'ROSE' = 'QSNPRTDF', then code for 'NOD' = ?

(a) OMNPCE (b) MONPCE
(c) ECPONOM (d) PCEONOM

62. In a certain code langauge 'how many goals scored' is written as '5397', ' many more matches' is written as '982' and 'he scored five' is written as '163'. How is 'goals' written in that code language? **[Syndicate Bank (PO) 2010]**

(a) 5 (b) 7
(c) 5 or 7 (d) Data inadequate
(e) None of these

Directions (Q. Nos. 63-67) In each of the questions below, a group of numerals is given followed by four groups of symbol/letter combinations lettered (a), (b), (c) and (d). Numerals are to be coded as per the codes and conditions given below. You have to find out which of the combinations (a), (b), (c) and (d) is correct and indicate your answer accordingly. If none of the four combinations represents the correct code, mark (e) as your answer. **[Dena Bank (PO) 2008]**

Numerals	3	5	7	4	2	6	8	1	0	9
Letter/Symbol code	★	B	E	A	@	F	K	%	R	M

Following conditions apply

(i) if the first digit as well as the last digits is odd, both are to be coded as 'X'.
(ii) if the first digit as well as the last digit is even, both are to be coded as $.
(iii) if the last digit is 'zero', it is to be coded as #.

63. 487692

(a) $KEFM@ (b) AKEFM@ (c) AKEFM$ (d) $KEFM$
(e) None of these

64. 713540

(a) X%★BA# (b) E%★BA#
(c) E%★BAR (d) X%★BAR
(e) None of these

65. 765082

(a) EFB#K@ (b) XFBRK@
(c) EFBRK@ (d) EFBR#K
(e) None of these

66. 364819

(a) ♪FAK%X (b) XFAK&M (c) ♪FAK%M (d) ♪EAK%X
(e) None of these

67. 546839

(a) XAFK★X (b) XAFK★M (c) BAFK★X (d) BAFK★M
(e) None of these

Directions (Q. Nos. 68-73) In each question below is given a group of letters followed by four combinations of digits/symbols numbered (a), (b), (c) and (d). You have to find out which of the four combinations correctly represents the group of letters based on the following coding system and the conditions that follow and mark the number of that combination as your answer. If none of the combinations correctly represents the group of letters, mark (e), i.e., 'None of these', as your answer.

Letter	Digit/Symbol code	Letter	Digit/Symbol code
R	∝	Q	4
E	#	I	η
A	$	O	@
U	6	H	c
M	%	N	3
D	1	W	δ
F	9	Z	8
P	★	B	2

Conditions

(i) If the first letter is a consonant and the third letter is a vowel, their codes are to the interchanged.
(ii) If the first letter is a vowel and the fourth letter is a consonant, both are to be coded as the code for the vowel.
(iii) If the second and the third letters are consonants, both are to be coded as the code for the third letter.

68. NUBAQE

(a) 263$4# (b) 326$4# (c) 362$4# (d) 362$3#
(e) None of these

69. FWZORH

(a) 9δ8@∝© (b) 9δδ@∝© (c) 9δ8∝@© (d) 988@∝©
(e) None of these

70. MBIUHQ

(a) η2%6©4 (b) %2η6©4 (c) %2%6©4 (d) η%26©4
(e) None of these

71. OPAIHM

(a) @$★η© (b) @★$η©% (c) η$★@©% (d) @★η$©%
(e) None of these

72. EAMWBN

(a) #$%δ23 (b) δ$%#23 (c) δ$%#23 (d) #$%#23
(e) None of these

73. AIWEZB

(a) $η$#82 (b) δη$#82 (c) δηδ#82 (d) $η8#82
(e) None of these

Response & Interpretations (Master Exercise)

1. (d) As,

$$\begin{array}{cccc} P & A & R & K \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & 3 & 9 & 4 \end{array} \quad \text{and} \quad \begin{array}{ccccc} S & H & I & R & T \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & 7 & 6 & 9 & 8 \end{array}$$

Also,

$$\begin{array}{cccccc} P & A & N & D & I & T \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & 3 & 2 & 0 & 6 & 8 \end{array}$$

Similarly,

$$\begin{array}{cccccc} N & I & S & H & A & R \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 2 & 6 & 1 & 7 & 3 & 9 \end{array}$$

∴ NISHAR ⇒ 261739

2. (c)

$$\begin{array}{ccccccccc} C & O & M & P & A & N & I & E & S \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ S & E & I & N & C & P & A & M & O \end{array}$$

∴ COMPANIES ⇒ SEINCPAMO

3. (c) As,

$$\begin{array}{ccccc} T & R & E & A & D \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 7 & \% & \# & 9 & 4 \end{array} \quad \text{and} \quad \begin{array}{cccc} P & R & E & Y \\ \downarrow & \downarrow & \downarrow & \downarrow \\ \$ & \% & \# & 8 \end{array}$$

Similarly,

$$\begin{array}{cccccc} A & R & T & E & R & Y \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 9 & \% & 7 & \# & \% & 8 \end{array}$$

∴ ARTERY ⇒ 9%7#%8

4. (e)

$$\begin{array}{cccccc} D & R & I & N & T & Q \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & 7 & 8 & 3 & 6 & 9 \end{array}$$

∴ DRINTQ ⇒ 578369

5. (d) From the given coded language, it is clear that

U – 9, N – 4, C – 6
L – 7, E – 2, S – 5
I – 3, T – 8, R – 1
O – 8

∴ NOISE ⇒ 48352

6. (*d*) As, $\begin{array}{ccccc} T & \boxed{R} & \boxed{A} & I & N \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 3 & \boxed{9} & \boxed{\star} & 7 & \% \end{array}$ and $\begin{array}{cccc} \boxed{M} & \boxed{E} & \boxed{A} & L \\ \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{4} & \boxed{\$} & \boxed{\star} & @ \end{array}$

Similarly, $\begin{array}{cccc} R & E & A & M \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 9 & \$ & \star & 4 \end{array}$

∴ REAM ⇒ 9$★4

7. (*b*) As, $\begin{array}{ccccccccc} B & \boxed{E} & A & U & \boxed{T} & I & \boxed{F} & \boxed{U} & L \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & \boxed{7} & 3 & 0 & \boxed{4} & 1 & \boxed{2} & \boxed{0} & 8 \end{array}$ and $\begin{array}{cccccc} B & U & \boxed{T} & T & \boxed{E} & \boxed{R} \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & 0 & \boxed{4} & 4 & \boxed{7} & \boxed{9} \end{array}$

Similarly, $\begin{array}{cccccc} F & \boxed{U} & T & U & R & E \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 2 & \boxed{0} & 4 & 0 & 9 & 7 \end{array}$

∴ FUTURE ⇒ 204097

8. (*a*) From the given coded language, it is clear that

M – 5, 0 – %, A – 3, N – $

E – 1, W – @, S – 8

∴ SOME ⇒ 8 % 51

9. (*a*) As, $\begin{array}{cccccc} B & A & \boxed{S} & \boxed{K} & E & \boxed{T} \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & \$ & \boxed{3} & \boxed{\%} & \# & \boxed{1} \end{array}$ and $\begin{array}{ccccc} \boxed{T} & \boxed{R} & I & E & D \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{1} & \boxed{4} & \star & \# & 2 \end{array}$

Similarly, $\begin{array}{ccccc} S & K & I & R & T \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 3 & \% & \star & 4 & 1 \end{array}$

∴ SKIRT ⇒ 3% ★ 41

10. (*c*) As, $\begin{array}{cccc} R & O & \boxed{A} & \boxed{M} \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & 9 & \boxed{1} & \boxed{3} \end{array}$ and $\begin{array}{cccc} D & O & \boxed{N} & \boxed{E} \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 4 & 9 & \boxed{6} & \boxed{2} \end{array}$

Similarly, $\boxed{\begin{array}{cccc} M & E & A & N \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 3 & 2 & 1 & 6 \end{array}}$

∴ MEAN ⇒ 3126

11. (*c*) As, $\begin{array}{cccc} D & \boxed{I} & N & \boxed{E} \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & \boxed{5} & 1 & \boxed{7} \end{array}$ and $\begin{array}{ccccc} \boxed{W} & O & \boxed{R} & \boxed{T} & \boxed{H} \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{\$} & \# & \boxed{9} & \boxed{6} & \boxed{@} \end{array}$

Similarly, $\begin{array}{cccccc} W & I & T & H & E & R \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ \$ & 5 & 6 & @ & 7 & 9 \end{array}$

∴ WITHER ⇒ $56@79

12. (*a*) As, $\begin{array}{cccccccccccccc} \boxed{R} & \boxed{O} & P & \boxed{E}, & D & \boxed{O} & \boxed{U} & \boxed{B} & \boxed{T}, & \boxed{L} & I & \boxed{V} & E \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{\%} & \boxed{5} & 7 & \boxed{\$} & 3 & \boxed{5} & \boxed{\#} & \boxed{8} & \boxed{\star} & \boxed{@} & 2 & \boxed{4} & \$ \end{array}$

Similarly, $\begin{array}{ccccccc} T & R & O & U & B & L & E \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ \star & \% & 5 & \# & 8 & @ & \$ \end{array}$

∴ TROUBLE ⇒ ★ % 5 # 8 @ $

13. (*b*) As, $\begin{array}{cccccc} G & \boxed{E} & \boxed{R} & M & \boxed{A} & \boxed{N} \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & \boxed{2} & \boxed{6} & 5 & \boxed{3} & \boxed{4} \end{array}$, $\begin{array}{cccc} \boxed{F} & O & O & D \\ \downarrow & & & \\ \boxed{9} & 7 & 7 & 0 \end{array}$

and $\begin{array}{cccc} \boxed{C} & O & \boxed{R} & \boxed{N} \\ \downarrow & \downarrow & \downarrow & \downarrow \\ \boxed{8} & 7 & \boxed{6} & \boxed{4} \end{array}$

Similarly, $\begin{array}{cccccc} F & R & A & N & C & E \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 9 & 6 & 3 & 4 & 8 & 2 \end{array}$

∴ FRANCE = 963482

14. (*c*) As we know that, a 'BIRD' flies in the sky but here 'BIRD' is called 'CUP'. Hence, in this case 'CUP' will fly in the sky.

15. (*b*) As we know that, 'COW' has four legs but here 'COW' is 'called' 'PIGEON'. Hence, in this case 'PIGEON' has four legs.

16. (*c*) As we know that, 'SNAKE' is a reptile but here 'SNAKE' is called 'MONKEY'. Hence, in this case 'MONKEY' is a reptile.

17. (*d*) 'FRUIT' grows on 'TREE' and here 'TREE' is called 'SKY'.

∴ Fruit grow on 'SKY'.

18. (*c*) We use 'pen' to write but here, 'PEN' is called 'BOOK'. Hence, in this case we use 'BOOK' to write.

19. (*d*) The sound produced by 'LION' is called roar but here 'LION' is called 'COW'. Hence, is this case 'COW' roars.

20. (*c*) The colour of sky is 'BLUE' and 'BLUE' is called 'WHITE'.

Hence, in this case color of sky is WHITE.

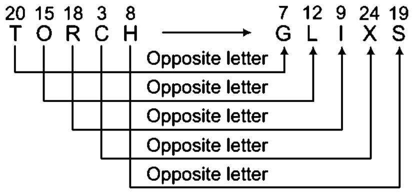
21. (*e*) 'Earth, is a 'Planet' but ' Planet' is called ' Satellite'.

Hence, in this case earth is a 'satellite'.

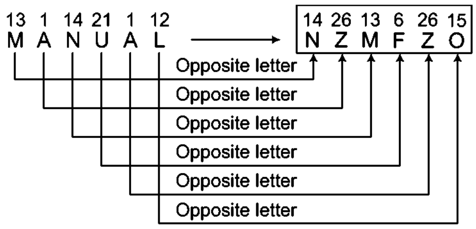
22. (*d*) 'Sugar' is used to make tea sweet but in the given question 'sugar' is called 'water'. Hence, required answer is 'water'.

23. (*c*) 'Car' has four wheels but here car is called 'bike'. Hence, required answer is 'bike'.

24. (*d*) As,

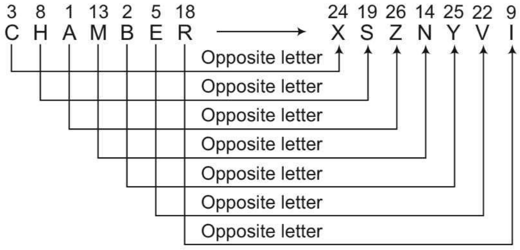


Similarly,

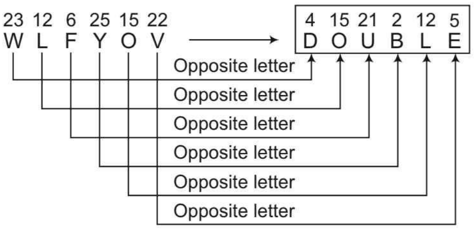


∴ MANUAL ⇒ NZMFZO

25. (*d*) As,

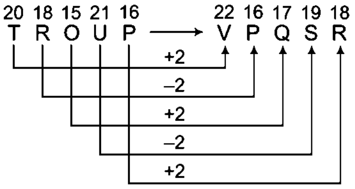

3 8 1 13 2 5 18
C H A M B E R
24 19 26 14 25 22 9
X S Z N Y V I
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

Similarly,

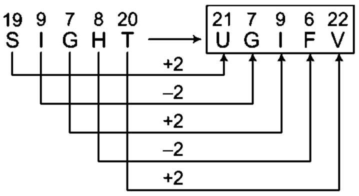

23 12 6 25 15 22
W L F Y O V
4 15 21 2 12 5
D O U B L E
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

∴ WLFYOV ⇒ DOUBLE

26. (*d*) As,


20 18 15 21 16
T R O U P
22 16 17 19 18
V P Q S R
+2
–2
+2
–2
+2

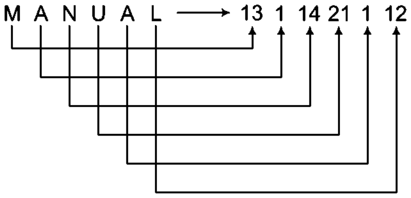
Similarly,


19 9 7 8 20
S I G H T
21 7 9 6 22
U G I F V
+2
–2
+2
–2
+2

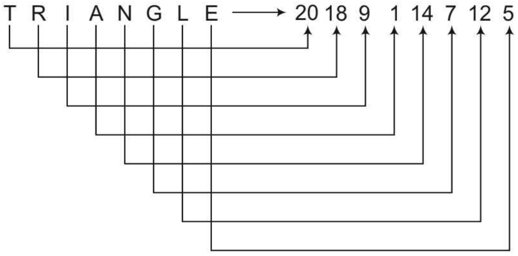
∴ SIGHT ⇒ UGIFV

27. (*b*) Each letter is coded with its corresponding letter position in the English alphabet.

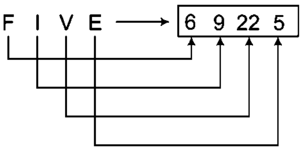
As,


M A N U A L
13 1 14 21 1 12

and


T R I A N G L E
20 18 9 1 14 7 12 5

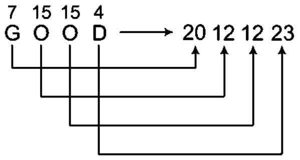
Similarly,



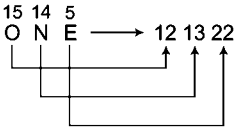
∴ FIVE ⇒ 69225

28. (*a*) Each letter is coded with its backward order corresponding letter position in English alphabet. Let us see

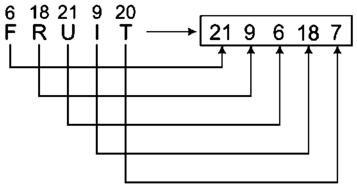
As,


7 15 15 4
G O O D
20 12 12 23

and


15 14 5
O N E
12 13 22

Similarly,


6 18 21 9 20
F R U I T
21 9 6 18 7

∴ FRUIT ⇒ 2196187

29. (*d*) 1 ② 3 ⟶ I am servant ...(i)

② 7 9 ⟶ servant always miserable ...(ii)

6 8 4 ⟶ poverty is curse ...(iii)

From Eqs. (i) and (ii),

2 ⇒ servant

∴ 1 ⇒ I/am

3 ⇒ I/am

7 ⇒ always/miserable

9 ⇒ always/miserable

∴ miserable ⇒ $\boxed{\text{7 or 9}}$

Clearly, it cannot be definitely said how will 'miserable' be written.

30. (*a*) 4 ⑨ 3 ⟶ Friendship Big Challenge ...(i)

⑨ 6 $\boxed{1}$ ⟶ Struggle Big $\boxed{\text{Exam}}$ ...(ii)

$\boxed{1}$ 7 8 ⟶ $\boxed{\text{Exam}}$ Confidential Subject ...(iii)

From Eqs. (i) and (ii),

9 ⇒ Big

From Eqs. (ii) and (iii),

1 ⇒ Exam

∴ 7 ⇒ Confidential/Subject

8 ⇒ Confidential/Subject

∴ Confidential ⇒ 7 or 8

31. (*b*) ① 5 7 ⟶ mother (always) lovable ...(i)

6 ① 9 ⟶ (always) happy future ...(ii)

9 5 2 ⟶ mother very happy ...(iii)

From Eqs. (i) and (ii),

1 ⇒ always

From Eqs. (ii) and (iii),

9 ⇒ happy

∴ future ⇒ 6

Solutions (Q. Nos. 32-34)

A. ① 5 9 ⟶ you better go
B. ① 6 7 ⟶ (better) come here
C. 5 6 7 ⟶ you come here
D. 1 5 6 ⟶ (better) you here
E. 3 7 9 ⟶ come and go

32. (*a*) From statements A and B,

1 ⇒ better

33. (*c*) From statements A and E,

9 ⇒ go

From statements B and E,

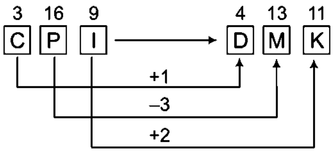
7 ⇒ come

Clearly, and ⇒ 3

34. (*a*) From Eqs. (i) and (v),

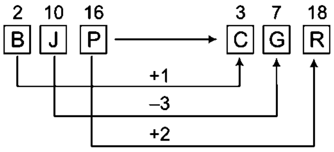
go ⇒ 9

35. (*b*) As,



3 16 9
C P I
4 13 11
D M K
+1
–3
+2

Similarly,



2 10 16
B J P
3 7 18
C G R
+1
–3
+2

Solutions (Q.Nos. 36-38) *Let us see*

(time) and money ⟶ ma (jo) ki

manage (time) well ⟶ pa ru (jo)

earn more money ⟶ zi ha ma

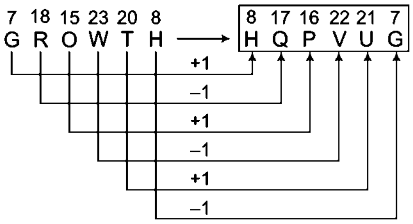
earn well enough ⟶ ma ru ha

36. (*c*) Code for 'earn' is 'ha'.

37. (*d*) 'jo zi' represents 'more time'.

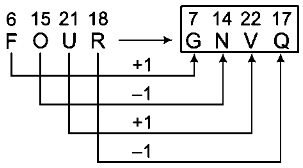
38. (*b*) 'pa' is the code for 'manage'.

39. (*d*) As,



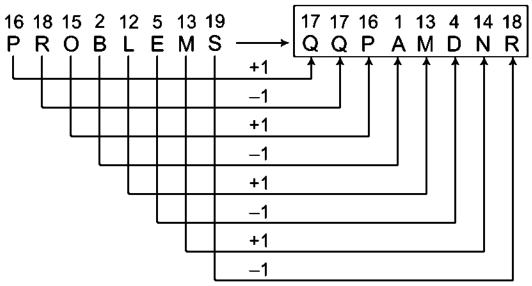
7 18 15 23 20 8
G R O W T H
8 17 16 22 21 7
H Q P V U G
+1
–1
+1
–1
+1
–1

and



6 15 21 18
F O U R
7 14 22 17
G N V Q
+1
–1
+1
–1

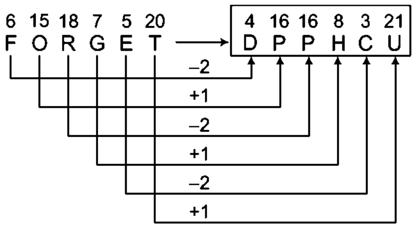
Similarly,



16 18 15 2 12 5 13 19
P R O B L E M S
17 17 16 1 13 4 14 18
Q Q P A M D N R
+1
–1
+1
–1
+1
–1
+1
–1

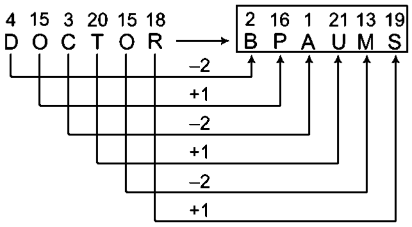
∴ PROBLEMS ⇒ QQPAMDNR

40. (*a*) As,



6 15 18 7 5 20
F O R G E T
4 16 16 8 3 21
D P P H C U
–2
+1
–2
+1
–2
+1

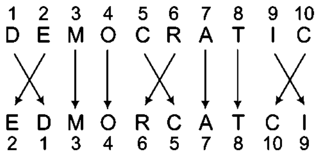
Similarly,



4 15 3 20 15 18
D O C T O R
2 16 1 21 13 19
B P A U M S
–2
+1
–2
+1
–2
+1

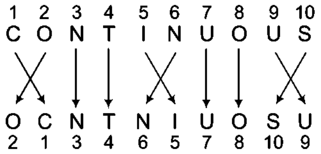
∴ DOCTOR ⇒ BPAUMS

41. (*c*) As,



1 2 3 4 5 6 7 8 9 10
D E M O C R A T I C
E D M O R C A T C I
2 1 3 4 6 5 7 8 10 9

Similarly,



1 2 3 4 5 6 7 8 9 10
C O N T I N U O U S
O C N T N I U O S U
2 1 3 4 6 5 7 8 10 9

∴ CONTINUOUS ⇒ OCNTNIUOSU

42. (*e*) As,

what	else	can	you	do	for	me	Mr	Ajay
1	2	3	4	5	6	7	8	9

⇓

you	Mr	what	can	Ajay	else	do	me	for
4	8	1	3	9	2	5	7	6

Similarly,

anyone	else	who	can	do	such	favour	to	me
1	2	3	4	5	6	7	8	9

⇓

can	to	anyone	who	me	else	do	favour	such
4	8	1	3	9	2	5	7	6

43. (*c*) 9 7 5 ⟶ throw away garbage ...(i)

5 ② 8 ⟶ give away smoking ...(ii)

② 1 3 ⟶ smoking is harmful ...(iii)

From Eqs. (ii) and (iii),

2 ⇒ smoking

44. (*d*) nee muk pic ⟶ grave and concern ...(i)

ill dic $\boxed{\text{so}}$ ⟶ every $\boxed{\text{body}}$ else ...(ii)

tur muk $\boxed{\text{so}}$ ⟶ $\boxed{\text{body}}$ and soul ...(iii)

From Eqs. (i) and (iii),

muk ⇒ and

From Eqs. (ii) and (iii),

so ⇒ body

∴ tur ⇒ soul

But its not possible to find the codes for 'every', 'grave', 'concern' and 'else'.

45. (*c*) pick and choose ⟶ ko ho po ...(i)

pick up and come ⟶ to no ko po ...(ii)

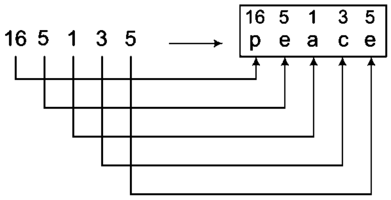
From Eqs. (i) and (ii),

pick ⇒ ko/po

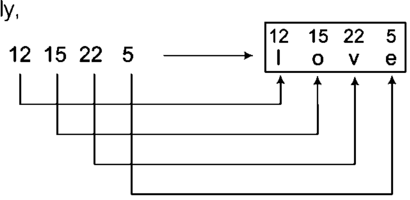
and ⇒ ko/po

∴ pick ⇒ Either 'ko' or 'po'

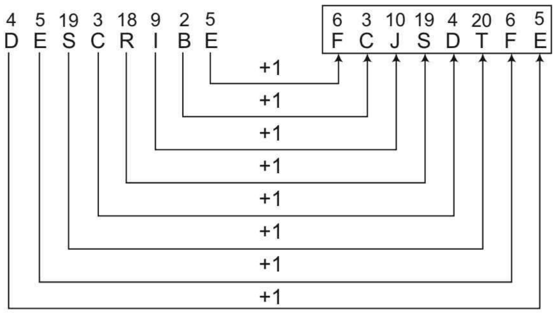
46. (*b*) As,


16 5 1 3 5
16 5 1 3 5
p e a c e

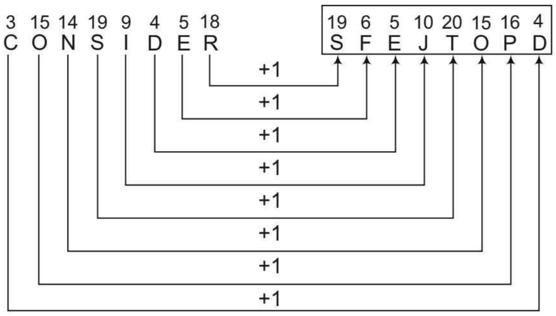
Similarly,


12 15 22 5
12 15 22 5
l o v e

47. (*a*) As,


4 5 19 3 18 9 2 5
D E S C R I B E
6 3 10 19 4 20 6 5
F C J S D T F E
+1
+1
+1
+1
+1
+1
+1
+1

Similarly,


3 15 14 19 9 4 5 18
C O N S I D E R
19 6 5 10 20 15 16 4
S F E J T O P D
+1
+1
+1
+1
+1
+1
+1
+1

∴ CONSIDER ⇒ SFEJTOPD

48. (*a*) Here,

$C \xrightarrow{+1} D$

$L \xrightarrow{+2} N$

$O \xrightarrow{+3} R$

$S \xrightarrow{+4} W$

$E \xrightarrow{+5} J$

Similarly,

$A \xrightarrow{+1} B$

$P \xrightarrow{+2} R$

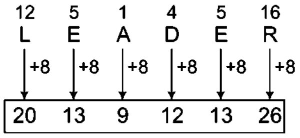
$A \xrightarrow{+3} D$

$R \xrightarrow{+4} V$

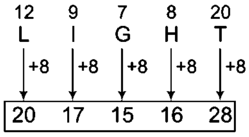
$T \xrightarrow{+5} Y$

∴ APART ⇒ BRDVY

49. (*c*) As,


12 5 1 4 5 16
L E A D E R
+8 +8 +8 +8 +8 +8
20 13 9 12 13 26

Similarly,


12 9 7 8 20
L I G H T
+8 +8 +8 +8 +8
20 17 15 16 28

∴ LIGHT ⇒ 20-17-15-16-28

50. (*c*) how many books ⟶ sa da na

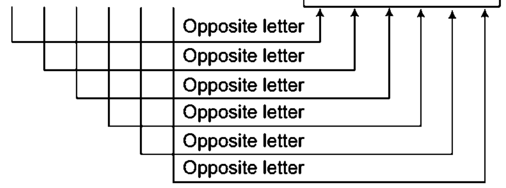
many more days ⟶ ka pa da

∴ 'Books' can be written as either 'sa' or 'na'.

51. (*b*) Each letter is coded with its opposite letter.

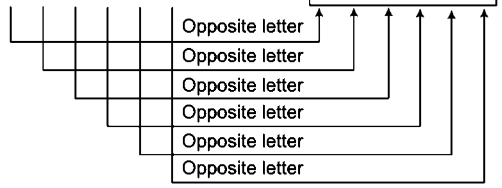
Let us see

As, N A T U R E → M Z G F I V


Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

Similarly,

A N S W E R → Z M H D V I

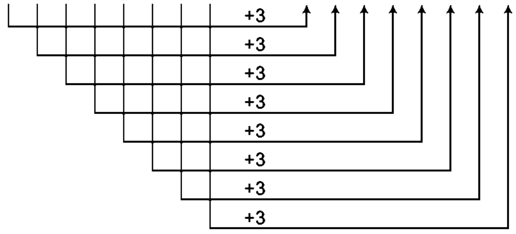

Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

∴ ANSWER ⇒ ZMHDVI

52. (*c*) Each letter is coded three letters forward.

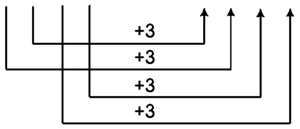
As, 18 1 20 9 15 14 1 12 → 21 4 23 12 18 17 4 15

R A T I O N A L → U D W L R Q D O



Similarly, 14 15 18 13 → 17 18 21 16

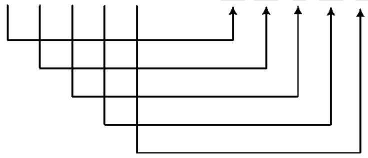
N O R M → Q R U P



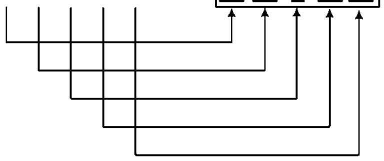
∴ NORM ⇒ QRUP

53. (*d*) Coded with corresponding position of letters.

As, T R E N D → 20 18 5 14 4



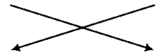
Similarly, S M A R T → 19 13 1 18 20



∴ SMART ⇒ 191311820

54. (*b*) Here, CONFI GURE

1 2

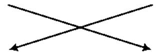


GURE IFNOC (Reverse order)

2 1

Similarly, ADVER TISE

1 2



TISE REVDA (Reverse order)

2 1

∴ ADVERTISE ⇒ TISEREVDA

55. (*c*) Correct code for SPORTS is 67, 55, 31, 57, 69, 87.

56. (*d*) As, S Y N D I C A T E → S Y T E N D C A I

1 2 3 4 5 6 7 8 9 → 1 2 8 9 3 4 6 7 5

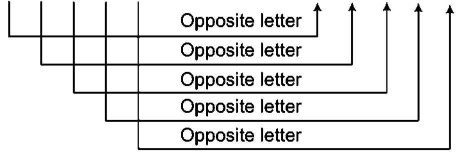
Similarly, P S Y C H O T I C → P S I C Y C O T H

1 2 3 4 5 6 7 8 9 → 1 2 8 9 3 4 6 7 5

57. (*a*) Each letter is coded with the position of its opposite letter.

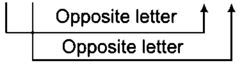
As, 11 1 13 1 12 → 16 26 14 26 15

K A M A L → P Z N Z O


Opposite letter
Opposite letter
Opposite letter
Opposite letter
Opposite letter

Similarly, 14 15 → 13 12

N O → M L

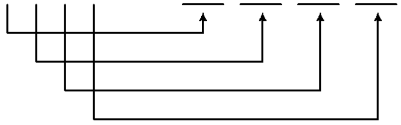

Opposite letter
Opposite letter

∴ N O ⇒ 13 12

58. (*a*) Each letter is coded with its right and left letters.

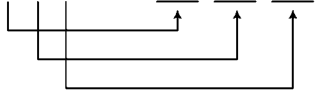
As, 14 9 14 5 → 15 13 10 8 15 13 6 4

N I N E → OM JH OM FD



Similarly, 12 15 20 → 13 11 16 14 21 19

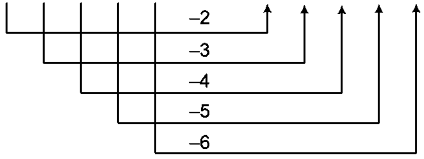
L O T → MK PN US



∴ LOT ⇒ MKPNUS

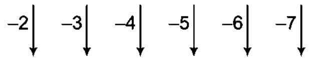
59. (*a*) As, 9 21 9 10 20 → 7 18 5 5 14

I U I J T → G R E E N



Similarly, 24 12 19 17 11 1

X L S Q K A

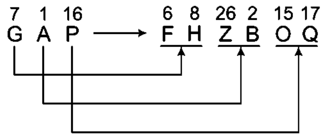


V I O L E T

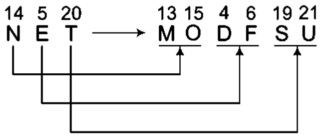
22 9 15 12 5 20

60. (*a*) Each letter is coded with its left and right letters in English alphabet.

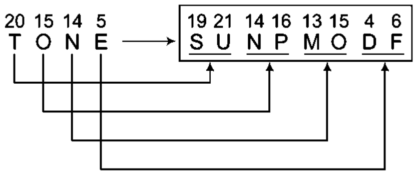
As,


7 1 16
G A P
6 8 26 2 15 17
F H Z B O Q

and


14 5 20
N E T
13 15 4 6 19 21
M O D F S U

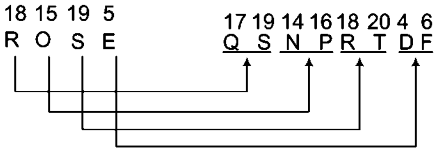
Similarly,


20 15 14 5
T O N E
19 21 14 16 13 15 4 6
S U N P M O D F

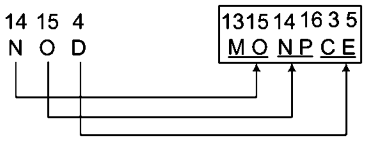
∴ TONE ⇒ SUNPMODF

61. (*b*) Each letter has been coded with its left and right letters.

As,


18 15 19 5
R O S E
17 19 14 16 18 20 4 6
Q S N P R T D F

Similarly,


14 15 4
N O D
13 15 14 16 3 5
M O N P C E

∴ NOD ⇒ MONPCE

62. (*c*) how $\underline{\text{many}}$ goals scored = 5 ③ $\underline{9}$ 7 ...(i)

$\underline{\text{many}}$ more matches = $\underline{9}$ 8 2 ...(ii)

he scored five = 1 6 ③ ...(iii)

From Eqs. (i) and (ii),

many ⇒ 9 ...(iv)

From Eqs. (i) and (iii),

scored ⇒ 3 ...(v)

Using Eqs. (iv) and (v) in Eq. (i), we get

goals ⇒ 5 or 7

Solutions (Q. Nos 63-67)

Letter	3	5	7	4	2	6	8	1	0	9
Digit/Symbol code	★	B	E	A	@	F	K	%	R	M

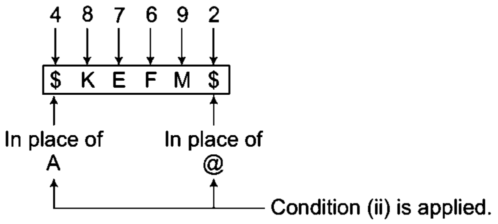
Conditions

(i) 1st digit odd, Last digit odd — Both are coded as X

(ii) 1st digit even, Last digit even — Both are coded as $

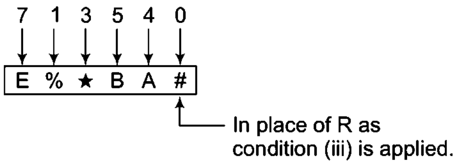
(iii) Last digit zero — code is #

63. (*d*)


4 8 7 6 9 2
$ K E F M $
In place of A
In place of @
Condition (ii) is applied.

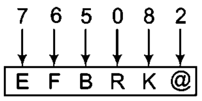
∴ 487692 ⇒ $ KEFM$

64. (*b*)


7 1 3 5 4 0
E % ★ B A #
In place of R as condition (iii) is applied.

∴ 713540 ⇒ E%★BA#

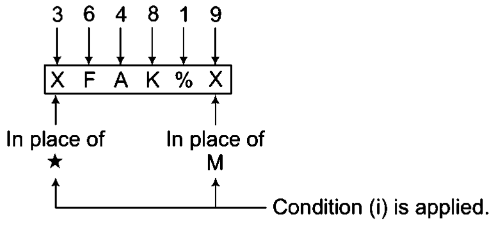
65. (*c*)


7 6 5 0 8 2
E F B R K @

No condition applied.

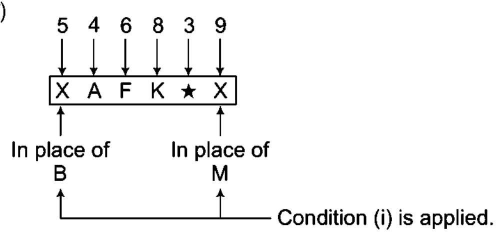
∴ 765082 ⇒ EFBRK@

66. (*e*)


3 6 4 8 1 9
X F A K % X
In place of ★
In place of M
Condition (i) is applied.

∴ 364819 ⇒ XFAK%X

67. (*a*)



∴ 546839 ⇒ XAFK★X

68. (*c*) Here, none of the condition is applied, so the coding is done as follows

N	U	B	A	Q	E
3	6	2	$	4	#

∴ Code for NUBAQE ⇒ 362$4#

69. (*d*) When no condition is applied, the coding is done as follows

F	W	Z	O	R	H
9	δ	8	@	∝	©

But here the second and third letters are consonants, therefore condition (iii) is applied here. As condition (iii) is applied here, both the second and third letters are to be coded as the code for the third letter.

F	W	Z	O	R	H
9	8	8	@	∝	©

∴ Code for FWZORH ⇒ 988@∝©

70. (*a*) When no condition is applied, the coding is done as follows

M	B	I	U	H	Q
%	2	η	6	©	4

But here the first letter is a consonant and the third letter is a vowel, therefore condition (i) is applied here. As condition (i) is applied here, the codes for first and third letters are interchanged.

M	B	I	U	H	Q
η	2	%	6	©	4

∴ Code for MBIUHQ ⇒ η 2%6©4

71. (*b*) Here, none of the condition is applied, so the coding is done as follows

O	P	A	I	H	M
@	★	$	η	©	%

∴ Code for OPAIHM ⇒ @★ $ η © %

72. (*d*) When no condition is applied, the coding is done as follows.

E	A	M	W	B	N
#	$	%	δ	2	3

But here the first letter is a vowel and the fourth letter is a consonant, therefore condition (ii) is applied here. As condition (ii) is applied, both the first and the fourth letters are to be coded as the code for the vowel.

E	A	M	W	B	N
#	$	%	#	2	3

∴ Code for EAMWBN ⇒ #$%#23

73. (*e*) Here, none of the condition is applied, so the coding is done as follows.

A	I	W	E	Z	B
$	η	δ	#	8	2

∴ Code for AIWEZB ⇒ $ η δ # 8 2

5

Series

Series is a sequential order of letters, numbers or both arranged such a way that each term in the series is obtained according to some specific rules. These rules can be based on mathematical operations, place of letters in alphabetical order etc.

Different types of questions covered in this chapter are as follows

- Number Series
- Letter Series
- Alpha-Numeric Series
- Continuous Pattern Series

In questions on series, a specified sequence/order of letters, numbers or a combination of both is given where one of the term (letter/number/letter and number) of the series is missing either at the end of the series or in between the series.

The candidate is required to identify the pattern involved in the formation of series and accordingly find the missing term to complete the series. Also, there may be some questions where one of the term in the series is incorrect and the candidate is required to find out that term of the series by identifying the pattern involved in the formation of series.

There is no set pattern and each question may follow a different pattern or sequential arrangement of letters or digits, which you have to detect using your common sense and reasoning ability.

On the basis of various types of questions that are asked in competitive exams, we have classified series into several types as follows

Type 1 Number Series

Number series is a logical sequence of more than one elements made of arithmetical digits. Logical sequence means that each element or term in a number series is obtained according to a certain rule or pattern. These series can be formed by applying various methods/patterns.

Let us see the following number series 2, 4, 6, 8, 10, …

When we see the above series, we notice that each element is 2 more than its previous element. Thus, we can say that each element of the above mentioned series is obtained following a rule

i.e., Previous element + 2 = Next element

There are no set rules. In each case you have to discover the pattern adopted. There can be omission of letters/digits in an order, there can also be alternate order, such as first one letter/digit is skipped, then two, then three and so on.

In various competitive exams the questions based on number series are asked in two different patterns. On this basis, we have classified number series into following two types

A. Inserting the Missing Number

In such types of questions, a series of numbers is given with one number/term missing from its place. The candidate is required to recognise the pattern involved in the formation of series and find the missing number accordingly.

Various different patterns are involved in the formation of series. Now, let us discuss some most common patterns involved in the formation of series.

Same Number Addition Series

In this type of series, the difference between two consecutive elements is same *i.e.,* each time same digit/number is added to previous element to obtain the next element.

***Ex* 1** What comes in place of question mark (?) in the series given below?

4, 8, 12, 16, 20, ?

(a) 18 (b) 21 (c) 19 (d) 24

Sol. (*d*) In the given series, the difference between two consecutive elements is same *i.e.*, 4.

$$\begin{array}{ccccccccccc} 4 & & 8 & & 12 & & 16 & & 20 & & \textcircled{24} \\ & +4 & & +4 & & +4 & & +4 & & +4 & \end{array} \qquad \therefore \quad ? = 24$$

Increasing Order Addition Series

In this type of series, number added to each term is in increasing order.

***Ex* 2** What comes in place of question mark (?) in the following number series?

2, 3, 5, 8, 12, 17, ?

(a) 23 (b) 19 (c) 18 (d) 25

Sol. (*a*) In the given series, the difference between two consecutive numbers is in increasing order *i.e.*, 1, 2, 3, 4, 5 and 6, respectively.

$$\begin{array}{ccccccccccccc} 2 & & 3 & & 5 & & 8 & & 12 & & 17 & & \textcircled{23} \\ & +1 & & +2 & & +3 & & +4 & & +5 & & +6 & \end{array} \qquad \therefore \quad ? = 23$$

Same Number Subtraction Series

In this type of series, each time the same digit/number is subtracted from previous element to obtain the next element and thus in such series, the difference between the two consecutive elements is same.

***Ex* 3** Replace the question mark (?) in the following number series with suitable option.

48, 43, 38, 33, 28, ?

(a) 24 (b) 18 (c) 23 (d) 19

Sol. (c) Here, the difference between two consecutive elements is same *i.e.*, 5.

$$\begin{array}{ccccccccccc} 48 & & 43 & & 38 & & 33 & & 28 & & \textcircled{23} \\ & -5 & & -5 & & -5 & & -5 & & -5 & \end{array} \qquad \therefore \quad ? = 23$$

Increasing Order Subtraction Series

In this type of series, the difference between two consecutive elements is in increasing order.

***Ex* 4** What comes in place of question mark (?) in the following number series?

95, 94, 92, 89, 85, 80, ?

(a) 74 (b) 69 (c) 75 (d) 77

Sol. (*a*) Here, the difference between two consecutive elements is in increasing order.

$$\begin{array}{ccccccccccccc} 95 & & 94 & & 92 & & 89 & & 85 & & 80 & & \textcircled{74} \\ & -1 & & -2 & & -3 & & -4 & & -5 & & -6 & \end{array} \qquad \therefore \quad ? = 74$$

Same Number Multiplication Series

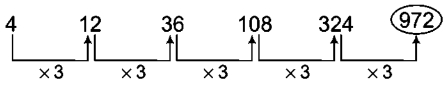
In this type of series, the ratio between two consecutive elements is same, *i.e.*, in this case, every time the previous element is multiplied by the same digit/number to obtain the next element.

***Ex* 5** What comes in place of question mark (?) in the following number series?

4, 12, 36, 108, 324, ?

(a) 520 (b) 680 (c) 475 (d) 972

Sol. (*d*) In the given series, previous element is multiplied by 3 to obtain the next element and therefore the ratio between two consecutive elements is same.



∴ ? = 972

Multiplication Series in Increasing Order

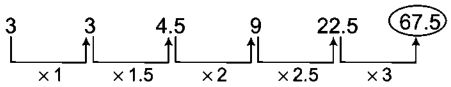
In this type of series, elements are multiplied with numbers in increasing order to obtain the next element.

***Ex* 6** Replace the question mark (?) in the following number series with suitable option.

3, 3, 4.5, 9, 22.5, ?

(a) 27.3 (b) 24 (c) 55 (d) 67.5

Sol. (*d*) In the given series, the ratio between two consecutive elements is in increasing order and elements are multiplied by the numbers in increasing order.



∴ ? = 67.5

Same Number Division Series

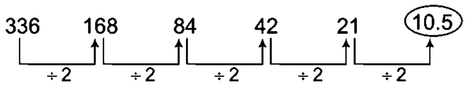
In this type of series, each time the previous element is divided by the same digit/number to obtain the next element.

***Ex* 7** What comes in place of question mark (?) in the following number series?

336, 168, 84, 42, 21, ?

(a) 17 (b) 10.5 (c) 15 (d) 14.5

Sol. (*b*) In the given series, previous element is divided by 2 to get the next element.



∴ ? = 10.5

Division Series in Increasing Order

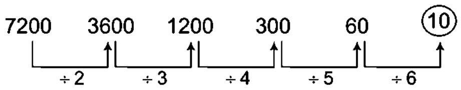
In this type of series, elements are divided by numbers in increasing order to obtain the next element.

***Ex* 8** What comes in place of question mark (?) in the following number series?

7200, 3600, 1200, 300, 60, ?

(a) 10 (b) 25 (c) 15 (d) 20

Sol. (*a*) In the given series, elements are divided by 2, 3, 4, 5 and 6 respectively to obtain the next elements.



∴ ? = 10

Same Number Multiplication and Same Number Addition Series

In this type of series, the next element is obtained by multiplying the previous number by a certain number A_1 and by adding a certain number A_2 in this multiplication.

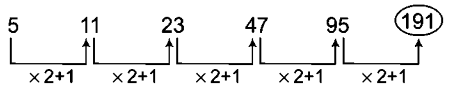
***Ex* 9** Replace the question mark (?) in the following number series with the suitable option.

5, 11, 23, 47, 95, ?

(a) 191 (b) 185 (c) 194 (d) 198

Sol. (*a*) In the given series, following pattern is used.

Next number = (Previous number × 2 + 1).



∴ ? = 191 [∵ $A_1 = 2$ and $A_2 = 1$]

Same Number Multiplication and Addition in Increasing Order Series

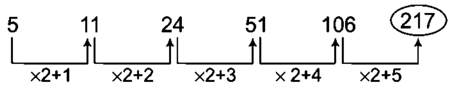
In this type of series, each previous element is multiplied by same number while numbers in increasing order are added respectively, in these multiplications to obtain the next element.

***Ex* 10** Replace the question mark (?) in the given series with suitable option.

5, 11, 24, 51, 106, ?

(a) 178 (b) 210 (c) 185 (d) 217

Sol. (*d*) In the given series, following pattern is used.



∴ ? = 217

Increasing Order Multiplication and Same Number Addition Series

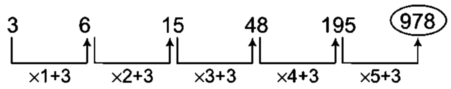
In this type of series, each previous element is multiplied respectively by numbers in increasing order and then a certain number is added in such multiplications to obtain the next element.

***Ex* 11** Replace the question mark (?) in the given series with suitable option.

3, 6, 15, 48, 195, ?

(a) 978 (b) 897 (c) 688 (d) 945

Sol. (*a*) In the given series, each previous element is multiplied by 1, 2, 3, 4 and 5, respectively and then 3 is added in such multiplication to obtain the next element.



∴ ? = 978

Increasing Order Multiplication and Increasing Order Addition Series

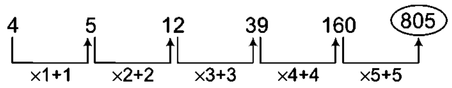
In this type of series, the previous elements are multiplied respectively by numbers in increasing order and then numbers in increasing order are respectively added in such multiplications to obtain the next elements.

***Ex* 12** What comes in place of question mark (?) in the following number series?

4, 5, 12, 39, 160, ?

(a) 225 (b) 695 (c) 805 (d) 790

Sol. (c) In the given series, following pattern is used



∴ ? = 805

Same Number Multiplication and Same Number Subtraction Series

In this type of series, each previous element is multiplied by a certain number A_1 and then a certain number A_2 is subtracted from this multiplication to obtain each next element.

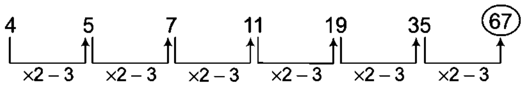
Ex **13** Replace the question mark (?) in the series given below with the correct option.

4, 5, 7, 11, 19, 35, ?

(a) 67 (b) 76 (c) 55 (d) 45

Sol. (*a*) In the given series,

Next element = (Previous element × 2 – 3).



∴ ? = 67 [∵ $A_1 = 2$ and $A_2 = 3$]

Same Number Multiplication and Subtraction in Increasing Order Subtraction Series

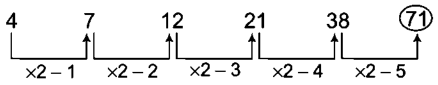
In this type of series, each previous element is multiplied by a certain number and then from such multiplications, numbers in increasing order are subtracted, respectively to obtain each next element.

Ex **14** What comes in place of question mark (?) in the following number series?

4, 7, 12, 21, 38, ?

(a) 75 (b) 71 (c) 78 (d) 77

Sol. (*b*) In the given series, following pattern is used.



∴ ? = 71

Increasing Order Multiplication and Same Number Subtraction Series

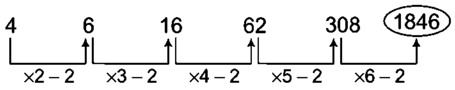
In this type of series, each previous element is multiplied by numbers in increasing order respectively and then from such multiplications, a certain number is subtracted to obtain each next element.

Ex **15** What comes in place of question mark (?) in the following number series?

4, 6, 16, 62, 308, ?

(a) 990 (b) 1721 (c) 698 (d) 1846

Sol. (*d*) In the given series, following pattern is used.



∴ ? = 1846

Increasing Order Multiplication and Increasing Order Subtraction Series

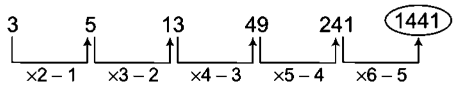
In this type of series, previous elements are multiplied respectively by numbers in increasing order and then numbers in increasing order are subtracted respectively from such multiplications to obtain the next elements.

Ex **16** What comes in place of question mark (?) in the following number series?

3, 5, 13, 49, 241, ?

(a) 1541 (b) 4411 (c) 1600 (d) 1441

Sol. (*d*) In the given series, following pattern is used.



∴ ? = 1441

Multiplication and Division Series

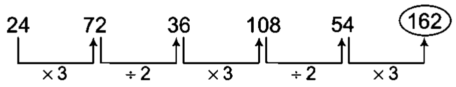
In this type of series, each next element is obtained by the operation of multiplication and division alternately.

***Ex* 17** Replace the question mark (?) in the given series with the suitable option.

24, 72, 36, 108, 54, ?

(a) 145 (b) 162 (c) 158 (d) 165

Sol. (*b*) The series pattern is × 3, ÷ 2, × 3, ÷ 2 and so on.



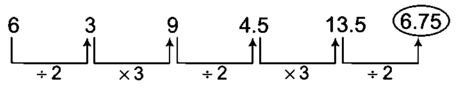
∴ ? = 162

***Ex* 18** Replace the question mark (?) in the given series with the suitable option.

6, 3, 9, 4.5, 13.5, ?

(a) 6.75 (b) 7 (c) 8.4 (d) 8

Sol. (*a*) The series pattern is ÷2, × 3, ÷ 2, × 3 and so on.



∴ ? = 6.75

Square Series

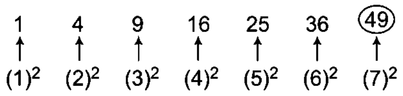
In this type of series, each element is the square of a number in a certain sequence.

***Ex* 19** Replace the question mark (?) in the series given below with the suitable option.

1, 4, 9, 16, 25, 36, ?

(a) 49 (b) 38 (c) 41 (d) 35

Sol. (*a*) In the given series, following pattern is used.



∴ ? = 49

Cube Series

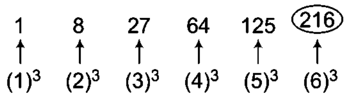
In this type of series, each element is the cube of a number in a certain sequence.

***Ex* 20** Replace the question mark (?) in the series given below with the suitable option.

1, 8, 27, 64, 125, ?

(a) 155 (b) 216 (c) 210 (d) 177

Sol. (*b*) In the given series, following pattern is used.



∴ ? = 216

Square Addition Series

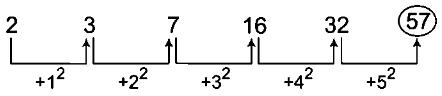
In this type of series, square of numbers in a particular manner are added, respectively to each element to obtain the next element.

***Ex* 21** Replace the question mark (?) in the series given below with the suitable option.

2, 3, 7, 16, 32, ?

(a) 57 (b) 37 (c) 48 (d) 55

Sol. (*a*) In the given series, following pattern is used.



∴ ? = 57

Cube Addition Series

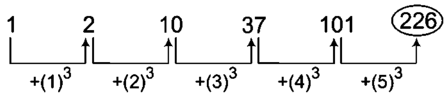
In this type of series, cube of numbers in a particular manner are added, respectively to each element to obtain the next element.

***Ex* 22** What comes in place of question mark (?) in the series given below?

1, 2, 10, 37, 101, ?

(a) 226 (b) 215 (c) 218 (d) 229

Sol. (*a*) In the given series, following pattern is used.


1
2
10
37
101
226
$+(1)^3$
$+(2)^3$
$+(3)^3$
$+(4)^3$
$+(5)^3$

∴ ? = 226

Prime Number Series

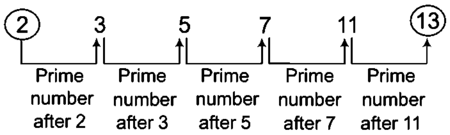
In this type of series, each element is prime number in certain sequence.

***Ex* 23** What replaces the question mark (?) in the following number series?

2, 3, 5, 7, 11, ?

(a) 14 (b) 15 (c) 13 (d) 17

Sol. (*c*) Each next element is the next prime number.


2
3
5
7
11
13
Prime number after 2
Prime number after 3
Prime number after 5
Prime number after 7
Prime number after 11

∴ ? = 13

Digital Operation of Number Series

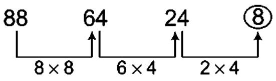
In this type of series, the digits of each number are operated in a certain way to obtain the next elements of the series.

***Ex* 24** What replaces question mark (?) in the series given below?

88, 64, 24, ?

(a) 8 (b) 6 (c) 2 (d) 5

Sol. (*a*) In the given series, following pattern is used.


88
64
24
8
8 × 8
6 × 4
2 × 4

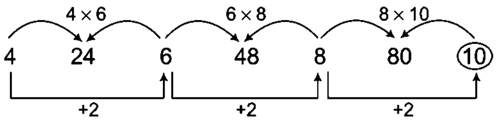
∴ ? = 8

***Ex* 25** What comes in place of question mark (?) in the given number series?

4, 24, 6, 48, 8, 80, ?

(a) 8 (b) 9 (c) 10 (d) 4

Sol. (*c*) In the given series, following pattern is used.


4 × 6
6 × 8
8 × 10
4
24
6
48
8
80
10
+2
+2
+2

∴ ? = 10

Mixed/Combination Series

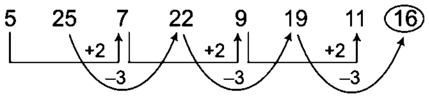
In this type of series, odd place elements make one series while the even place elements make another series.

***Ex* 26** Replace the question mark (?) in the following number series.

5, 25, 7, 22, 9, 19, 11, ?

(a) 15 (b) 14 (c) 13 (d) 16

Sol. (*d*) In the given series, following pattern is used.



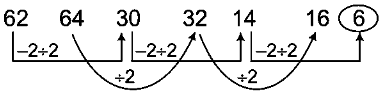
∴ ? = 16

***Ex* 27** What comes in place of question mark (?) in the series given below?

62, 64, 30, 32, 14, 16, ?

(a) 6 (b) 18 (c) 13 (d) 12

Sol. (*a*) In the given series, following pattern is used.



∴ ? = 6

Practice Corner **5.1**

Build your Confidence...

Directions (Q. Nos. 1-66) In the following series, replace the question mark (?) with the suitable option.

1. 6, 9, 12, 15, 18, ? **[SSC (Multitasking) 2013]**
(a) 21 (b) 20 (c) 19 (d) 22

2. 15, 30, 60, 120, 240, ?
(a) 480 (b) 518 (c) 445 (d) 715

3. 360, 180, 90, 45, 22.5, ?
(a) 15 (b) 11.25 (c) 20 (d) 10.5

4. 4, 5, 7, 10, 14, 19, ?
(a) 28 (b) 23 (c) 22 (d) 25

5. 3.5, 7, 10.5, 14, ? **[SSC (Multitasking) 2013]**
(a) 15.5 (b) 16.5 (c) 18.5 (d) 17.5

6. 445, 444, 442, 439, 435, ?
(a) 427 (b) 418 (c) 430 (d) 425

7. 12, 12, 24, 72, 288, ?
(a) 1440 (b) 1326 (c) 1456 (d) 1235

8. 7, 12, 19, 28, 39, ? **[SSC (Multitasking) 2013]**
(a) 52 (b) 50 (c) 51 (d) 48

9. 36, 28, 24, 22, ? **[SSC (CPO) 2010]**
(a) 18 (b) 19 (c) 21 (d) 22

10. 7, 9, 13, 21, 37, ? **[SSC (CPO) 2010]**
(a) 58 (b) 63 (c) 69 (d) 72

11. 27, 32, 30, 35, 33, ? **[SSC (10+2) 2011]**
(a) 28 (b) 31 (c) 36 (d) 38

12. 71, 59, 48, 38, 29, ? **[SSC (10+2) 2011]**
(a) 18 (b) 21 (c) 20 (d) 12

13. 14, 21, 30, 41, 54, ? **[SSC (CGL) 2010]**
(a) 61 (b) 73 (c) 69 (d) 70

14. 2, 5, 10, ?, 26 **[SSC (CGL) 2010]**
(a) 19 (b) 21 (c) 17 (d) 25

15. 1, 6, 15, ?, 45, 66, 91 **[RRB (TC/CC) 2012]**
(a) 25 (b) 26 (c) 27 (d) 28

16. 17, 14, 15, 12, 13, ?, ? **[SSC (LDC) 2010]**
(a) 10, 11 (b) 14, 11 (c) 11,13 (d) 12, 15

17. 97, 86, 99, 88, 101, ?, ? **[SSC (Constable) 2010]**
(a) 88, 99 (b) 90, 103 (c) 121, 108 (d) 114, 103

18. 15, 23, 31, 39, ? , 55, 63
(a) 45 (b) 47 (c) 46 (d) 44

19. 2, 3.5, 5, 6.5, 8, ? **[SSC (Multitasking) 2013]**
(a) 9.0 (b) 9.5 (c) 10.5 (d) 11.0

20. 3, 6, 18, 72, ? **[NIFT (UG) 2012]**
(a) 144 (b) 216 (c) 288 (d) 360

21. 32, 58, 92, 134, ?
(a) 169 (b) 184 (c) 194 (d) 156

22. 107, 97, 82, 62, ? **[SSC (Multitasking) 2013]**
(a) 52 (b) 42 (c) 47 (d) 37

23. 2, 6, 12, ?, 30 **[SSC (Steno) 2011]**
(a) 18 (b) 24 (c) 20 (d) 26

24. 24, 60, 120, ?, 110 **[MAT 2013]**
(a) 300 (b) 336 (c) 420 (d) 525

25. 7, 12, 22, 42, 82,? **[SSC (CGL) April 2014]**
(a) 143 (b) 173 (c) 162 (d) 183

26. 2, 3, 5, 9, 17, ? **[SSC (CGL) April 2014]**
(a) 34 (b) 31 (c) 32 (d) 33

27. 0, 3, 8, 15, 24, ?, 48 **[SSC (Multitasking) 2014]**
(a) 41 (b) 29 (c) 37 (d) 35

28. 0, 3, 8, 15,? **[CLAT 2014]**
(a) 24 (b) 26
(c) 35 (d) None of these

29. 5, 16, 51, 158, ? **[SSC (CGL) 2013]**
(a) 1452 (b) 483 (c) 481 (d) 1454

30. 8, 16, 28, 44, ? **[CLAT 2014]**
(a) 60 (b) 64 (c) 62 (d) 66

31. 230, 246, 271, 307, ? **[SSC (Constable) 2010]**
(a) 412 (b) 356 (c) 518 (d) 612

32. 1, 3, 7, 15, 31, 63, 127, ?
(a) 260 (b) 275 (c) 350 (d) 255

33. 4, ?, 144, 400, 900, 1764 **[SSC (Steno) 2012]**
(a) 25 (b) 36 (c) 49 (d) 100

34. 8, 3, 11, 14, 25, ? **[SSC (Multitasking) 2013]**
(a) 50 (b) 39 (c) 29 (d) 11

35. 1, 4, 9, 16, 25, ? **[SBI (PO) 2010]**
(a) 49 (b) 60 (c) 30 (d) 36
(e) 48

36. 2, 5, 11, 23, ? **[SBI (PO) 2010]**
(a) 46 (b) 52 (c) 47 (d) 57
(e) 48

37. 198, 194, 185, 169, ? **[SBI (CPO) 2013]**
(a) 92 (b) 136 (c) 144 (d) 112

38. 101, 100, ? , 87, 71, 46
(a) 92 (b) 88 (c) 89 (d) 96

39. 100, 50, 52, 26, 28, ? , 16, 8
(a) 30 (b) 36 (c) 14 (d) 32

40. 462, 420, 380, ?, 306 **[MAT 2013]**
(a) 322 (b) 332 (c) 342 (d) 352

41. 0, 6, 24, 60, 120, 210, ? **[CLAT 2014]**
(a) 290 (b) 240 (c) 336 (d) 504

42. 3, 15, 35, 63, ?, 143 **[NIFT (UG) 2014]**
(a) 120 (b) 110 (c) 99 (d) 91

43. 4, 9, 19, 39, 79, ? **[NIFT (UG) 2014]**
(a) 159 (b) 119 (c) 139 (d) 169

44. 5, 10, 8, 12, 11, 14, ?, 16 **[NIFT (UG) 2014]**
(a) 17 (b) 13 (c) 20 (d) 14

45. 980, 392, 156.8, ?, 25.088, 10.0352 **[BOB (Clerk) 2011]**
(a) 65.04 (b) 60.28 (c) 62.72 (d) 63.85
(e) None of these

46. 11, 29, 55, ?, 131 **[SSC (CPO) 2013]**
(a) 110 (b) 81 (c) 89 (d) 78

47. 10, 9, 16, 45, 176, ? **[Hotel Mgmt 2012]**
(a) 815 (b) 222 (c) 555 (d) 875

48. 77, 59, 55, 35, 25, ? **[MAT 2012]**
(a) 24 (b) 28 (c) 20 (d) 27

49. 99, 82, 18, 11, ?
(a) 5 (b) 10 (c) 2 (d) 9

50. 17, 36, 74, 150, ?, 606, **[CLAT 2013]**
(a) 250 (b) 303 (c) 300 (d) 302

51. 0, 4, 18, 48, ?, 180 **[SSC (CGL) 2010]**
(a) 58 (b) 68 (c) 84 (d) 100

52. 113, 225, 449, ?, 1793 **[SSC (DEO) 2010]**
(a) 897 (b) 789 (c) 987 (d) 978

53. 5, 9, 21, 37, 81, ? **[MP PCS 2008]**
(a) 163 (b) 153
(c) 181 (d) 203

54. 4, 11, 30, 67, 128, ? **[SSC (10 + 2) 2013]**
(a) 219 (b) 228
(c) 231 (d) 237

55. 2, 10, 30, 68, ? **[SSC (Steno) 2012]**

(a) 125 (b) 130 (c) 128 (d) 135

56. 50, 60, 75, 97.5, ?, 184.275, 267.19875

(a) 120.50 (b) 130.50 (c) 131.625 (d) 124.25
(e) None of these

57. 4, 10, 40, 190, 940, ?, 23440 **[OBC (Clerk) 2011]**

(a) 4690 (b) 2930 (c) 5140 (d) 3680
(e) None of these

58. 2, 1, 4, 3, 6, 5, 8, ? **[CLAT 2013]**

(a) 9 (b) 10 (c) 7 (d) 8

59. 3, 128, 6, 64, 9, ?, 12, 16, 15, 8

(a) 32 (b) 12 (c) 108 (d) 72

60. 3, 4.5, ?, 10.125, 15.1875

(a) 6 (b) 6.45 (c) 5.75 (d) 6.75

61. 51975, 9450, 2100, 600, 240, 160, ? **[SBI (PO) 2007]**

(a) 80 (b) 120 (c) 320 (d) 240
(e) None of these

62. 45, 46, 70, 141, ?, 1061.5 **[BOI (PO) 2011]**

(a) 353 (b) 353.5 (c) 352.5 (d) 352
(e) None of these

63. 6, 13, 38, ?, 532, 2675 **[Syndicate Bank (PO) 2010]**

(a) 129 (b) 123 (c) 172 (d) 164
(e) None of these

64. 36, 34, 30, 28, 24, ? **[SSC (Steno) 2013]**

(a) 23 (b) 26 (c) 20 (d) 22

65. 3, 9, 6, 36, 30, ? **[SSC (10 + 2) 2013]**

(a) 900 (b) 800 (c) 950 (d) 400

66. 8, 16, 28, 44, ? **[SSC (Multitasking) 2014]**

(a) 62 (b) 64
(c) 66 (d) 60

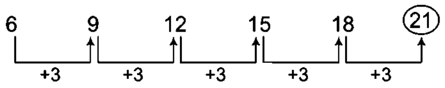
67. Where should the number 17 be placed to fit into the sequence? **[SNAP 2013]**

18, 11, 15, 14, 19, 16, 10, 12, 20

(a) Between 14 and 19 (b) Between 18 and 11
(c) Between 19 and 16 (c) Between 12 and 20

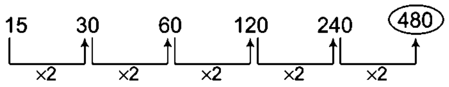
Response & Interpretations

1. (*a*) The pattern is as follows


6
9
12
15
18
21
+3
+3
+3
+3
+3

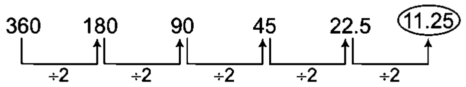
∴ ? = 20

2. (*a*) The pattern is as follows


15
30
60
120
240
480
×2
×2
×2
×2
×2

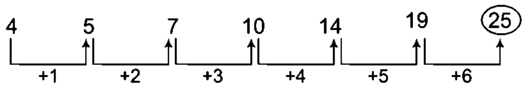
∴ ? = 480

3. (*b*) The pattern is as follows


360
180
90
45
22.5
11.25
÷2
÷2
÷2
÷2
÷2

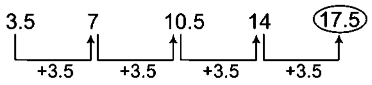
∴ ? = 11.25

4. (*d*) The pattern is as follows


4
5
7
10
14
19
25
+1
+2
+3
+4
+5
+6

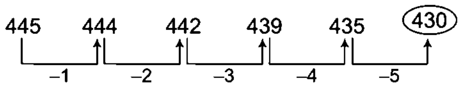
∴ ? = 25

5. (*d*) The pattern is as follows


3.5
7
10.5
14
17.5
+3.5
+3.5
+3.5
+3.5

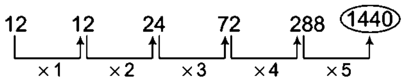
∴ ? = 17.5

6. (*c*) The pattern is as follows


445
444
442
439
435
430
–1
–2
–3
–4
–5

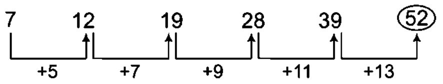
∴ ? = 430

7. (*a*) The pattern is as follows


12
12
24
72
288
1440
×1
×2
×3
×4
×5

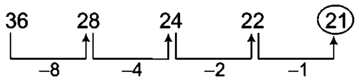
∴ ? = 1440

8. (*a*) The pattern is as follows


7
12
19
28
39
52
+5
+7
+9
+11
+13

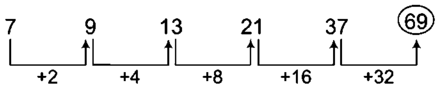
∴ ? = 52

9. (*c*) The pattern is as follows


36
28
24
22
21
–8
–4
–2
–1

∴ ? = 21

10. (*c*) The pattern is as follows


7
9
13
21
37
69
+2
+4
+8
+16
+32

∴ ? = 69

11. (*d*) The pattern is as follows

27 32 30 35 33 ㊳

+5 −2 +5 −2 +5

∴ ? = 38

12. (*d*) The pattern is as follows

71 59 48 38 29 ㉑

−12 −11 −10 −9 −8

∴ ? = 21

13. (*c*) The pattern is as follows

14 21 30 41 54 (69)

+7 +9 +11 +13 +15

∴ ? = 69

14. (*c*) The pattern is as follows

2 5 10 ⑰ 26

+3 +5 +7 +9

∴ ? = 17

15. (*d*) The pattern is as follows

1 6 15 ㉘ 45 66 91

+5 +9 +13 +17 +21 +25

∴ ? = 28

16. (*a*) The pattern is as follows

17 14 15 12 13 ⑩ ⑪

−3 +1 −3 +1 −3 +1

∴ First (?) = 10 and second (?) = 11

∴ Required answer = 10, 11

17. (*b*) The pattern is as follows

97 86 99 88 101 (90) (103)

−11 +13 −11 +13 −11 +13

∴ First (?) = 90 and second (?) = 103

∴ Required answer = 90, 103

18. (*b*) The pattern is as follows

15 23 31 39 ㊼ 55 63

+8 +8 +8 +8 +8 +8

∴ ? = 47

19. (*b*) The pattern is as follows

2 3.5 5 6.5 8 (9.5)

+1.5 +1.5 +1.5 +1.5 +1.5

∴ ? = 9.5

20. (*d*) The pattern is as follows

3 6 18 72 (360)

3×2 6×3 18×4 72×5

∴ ? = 360

21. (*b*) The pattern is as follows

32 58 92 134 (184)

+26 +34 +42 +50

+8 +8 +8

∴ ? = 184

22. (*d*) The pattern is as follows

107 97 82 62 ㊲

−10 −15 −20 −25

∴ ? = 37

23. (*c*) The pattern is as follows

2 6 12 ⑳ 30

+4 +6 +8 +10

∴ ? = 20

24. (*b*) The pattern is as follows

24 60 120 110 (336)

+36 +60 +90 +126

+24 +30 +36

∴ ? = 336

25. (*c*) The pattern is as follows

7 12 22 42 82 (162)

+5 +10 +20 +40 +80

×2 ×2 ×2 ×2

∴ ? = 162

26. (*d*) The pattern is as follows

2 3 5 9 17 ㉝

+1 +2 +4 +8 +16

∴ ? = 33

27. (*d*) The pattern is as follows

$1^2 - 1 = 0 \Rightarrow 2^2 - 1 = 3$

$3^2 - 1 = 8 \Rightarrow 4^2 - 1 = 15$

$5^2 - 1 = 24 \Rightarrow 6^2 - 1 =$ ㉟

$7^2 - 1 = 48$

∴ ? = 35

28. (*b*) The pattern is as follows

0 3 8 15 ㉖

+3 +5 +7 +11

Addition of prime numbers.

∴ ? = 26

29. (*c*) The pattern is as follows

$5 \times 3 + 1 = 16$

$16 \times 3 + 3 = 51$

$51 \times 3 + 5 = 158$

$158 \times 3 + 7 =$ (481)

∴ ? = 481

30. (*b*) The pattern is as follows

8 16 28 44 64

8 12 16 20

+4 +4 +4

$\therefore$? = 64

31. (*b*) The pattern is as follows

230 246 271 307 356

$+4^2$ $+5^2$ $+6^2$ $+7^2$

$\therefore$? = 356

32. (*d*) The pattern is as follows

1 3 7 15 31 63 127 255

×2+1 ×2+1 ×2+1 ×2+1 ×2+1 ×2+1 ×2+1

$\therefore$? = 225

33. (*b*) The pattern is as follows

4 36 144 400 900 1764

$(2)^2$ $(6)^2$ $(12)^2$ $(20)^2$ $(30)^2$ $(42)^2$

+4 +6 +8 +10 +12

$\therefore$? = 36

34. (*b*) Every third element is the sum of previous two elements.

$8 + 3 = 11$

$\Rightarrow$ $3 + 11 = 14$

$11 + 14 = 25$

$\Rightarrow$ $14 + 25 = 39$

$\therefore$? = 39

35. (*d*) The pattern is as follows

1 4 9 16 25 36

1^2 2^2 3^2 4^2 5^2 6^2

$\therefore$? = 36

36. (*c*) The pattern is as follows

2 5 11 23 47

×2+1 ×2+1 ×2+1 ×2+1

$\therefore$? = 47

37. (*c*) The pattern is as follows

198 194 185 169 144

-2^2 -3^2 -4^2 -5^2

$\therefore$? = 144

38. (*d*) The pattern is as follows

101 100 96 87 71 46

$-(1)^2$ $-(2)^2$ $-(3)^2$ $-(4)^2$ $-(5)^2$

$\therefore$ Missing number $= 100 - (2)^2 = 100 - 4 = 96$

39. (*c*) The pattern is as follows

100 50 52 26 28 14 16 8

÷2 ÷2 ÷2 ÷2

$\therefore$ Missing number $= \frac{28}{2} = 14$

40. (*c*) This pattern is as follows

462 420 380 342 306

– 42 – 40 – 38 – 36

$\therefore$? = 342

41. (*c*) The pattern is as follows

$0^3 - 0 = 0$

$2^3 - 2 = 6$

$3^3 - 3 = 24$

$4^3 - 4 = 60$

$5^3 - 5 = 120$

$6^3 - 6 = 210$

$7^3 - 7 = 336$

$\therefore$? = 336

42. (*c*) The pattern is as follows

$3 = 1 \times 3 \Rightarrow 15 = 3 \times 5$

$35 = 5 \times 7 \Rightarrow 63 = 7 \times 9$

$\boxed{99 = 9 \times 11} \Rightarrow 143 = 11 \times 13$

$\therefore$? = 99

43. (*a*) The pattern is as follows

4 9 19 39 79 159

+5 +10 +20 +40 +80

×2 ×2 ×2 ×2

$\therefore$? = 159

44. (*d*) There are two alternate series

5 10 8 12 11 14 14 16

+3 +2 +3 +2 +3 +2

$\therefore$? = 14

45. (*c*) The pattern is as follows

980 392 156.8 62.72 25.088 10.0352

$\times\frac{2}{5}$ $\times\frac{2}{5}$ $\times\frac{2}{5}$ $\times\frac{2}{5}$ $\times\frac{2}{5}$

$\therefore$? = 62.72

46. (*c*) The pattern is as follows

$3^2 + 2 = 11$

$5^2 + 4 = 29$

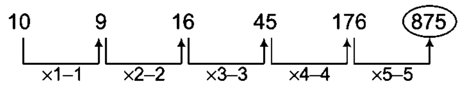
$7^2 + 6 = 55$

$9^2 + 8 = 89$

$11^2 + 10 = 131$

$\therefore$? = 89

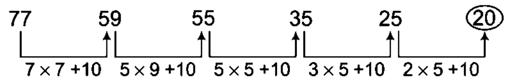
47. (*d*) The pattern is as follows



10 9 16 45 176 875
×1–1 ×2–2 ×3–3 ×4–4 ×5–5

∴ ? = 176 × 5 – 5 = 875

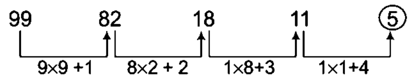
48. (*c*) Digits of each element are multiplied and then 10 is added to this multiplication to obtain the next element.



77 59 55 35 25 20
7 × 7 +10 5 × 9 +10 5 × 5 +10 3 × 5 +10 2 × 5 +10

∴ ? = 2 × 5 + 10 = 10 + 10 = 20

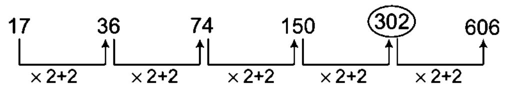
49. (*a*) Digits of each term are multiplied and then 1, 2, 3 and 4 are added, respectively to obtain the next elements.



99 82 18 11 5
9×9 +1 8×2 + 2 1×8+3 1×1+4

∴ ? = 1 × 1 + 4
= 1 + 4 = 5

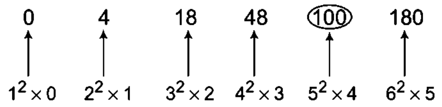
50. (*d*) The pattern is as follows



17 36 74 150 302 606
× 2+2 × 2+2 × 2+2 × 2+2 × 2+2

∴ ? = 150 × 2 + 2 = 302

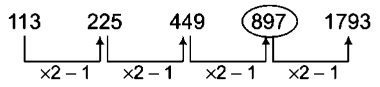
51. (*d*) The pattern is as follows



0 4 18 48 100 180
1² × 0 2² × 1 3² × 2 4² × 3 5² × 4 6² × 5

∴ ? = $5^2 \times 4 = 25 \times 4 = 100$

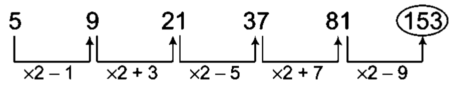
52. (*a*) The pattern is as follows



113 225 449 897 1793
×2 – 1 ×2 – 1 ×2 – 1 ×2 – 1

∴ ? = 897

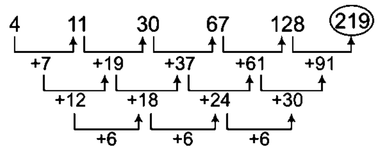
53. (*b*) The pattern is as follows



5 9 21 37 81 153
×2 – 1 ×2 + 3 ×2 – 5 ×2 + 7 ×2 – 9

∴ ? = 153

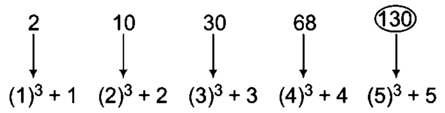
54. (*d*) The pattern is as follows



4 11 30 67 128 219
+7 +19 +37 +61 +91
+12 +18 +24 +30
+6 +6 +6

∴ ? = 219

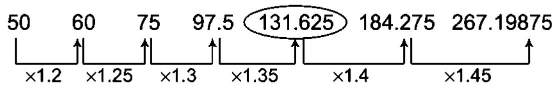
55. (*b*) The pattern is as follows



2 10 30 68 130
(1)³ + 1 (2)³ + 2 (3)³ + 3 (4)³ + 4 (5)³ + 5

∴ ? = 130

56. (*c*) The pattern is as follows



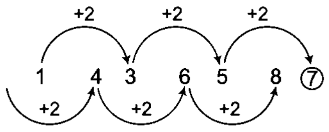
50 60 75 97.5 131.625 184.275 267.19875
×1.2 ×1.25 ×1.3 ×1.35 ×1.4 ×1.45

∴ ? = 131.625

57. (*a*) The pattern is as follows

$4 + 6 = 10$
$10 + (6 \times 5) = 40$
$40 + (30 \times 5) = 190$
$190 + (150 \times 5) = 940$
$940 + (750 \times 5) = 4690$
$4690 + (3750 \times 5) = 23440$
∴ ? = 4690

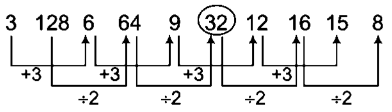
58. (*c*) There are two interwoven series here.



+2 +2 +2
1 4 3 6 5 8 7
+2 +2 +2

∴ ? = 7

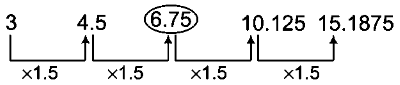
59. (*a*) The pattern is as follows



3 128 6 64 9 32 12 16 15 8
+3 +3 +3 +3
÷2 ÷2 ÷2 ÷2

∴ ? = 32

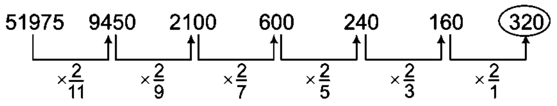
60. (*d*) The pattern is as follows



3 4.5 6.75 10.125 15.1875
×1.5 ×1.5 ×1.5 ×1.5

∴ ? = 6.75

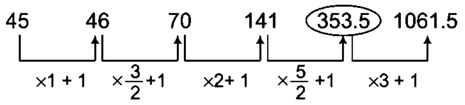
61. (*c*) The pattern is as follows



51975 9450 2100 600 240 160 320
×2/11 ×2/9 ×2/7 ×2/5 ×2/3 ×2/1

∴ ? = 320

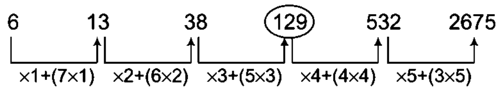
62. (*b*) The pattern is as follows



45 46 70 141 353.5 1061.5
×1 + 1 ×3/2 +1 ×2+ 1 ×5/2 +1 ×3 + 1

∴ ? = 353.5

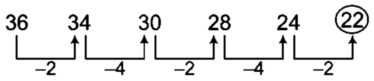
63. (*a*) The pattern is as follows



6 13 38 129 532 2675
×1+(7×1) ×2+(6×2) ×3+(5×3) ×4+(4×4) ×5+(3×5)

∴ ? = 129

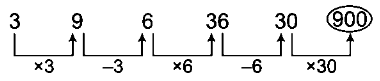
64. (*c*) The pattern is as follows



36 34 30 28 24 22
–2 –4 –2 –4 –2

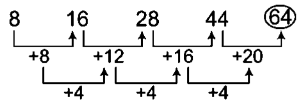
∴ ? = 22

65. (*a*) The pattern is as follows


3
9
6
36
30
900
×3
−3
×6
−6
×30

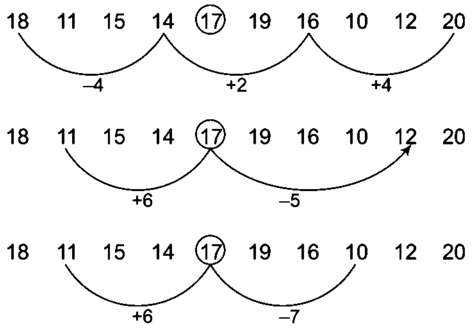
∴ ? = 900

66. (*b*) The pattern is as follows


8
16
28
44
64
+8
+12
+16
+20
+4
+4
+4

∴ ? = 64

67. (*a*) We put 17 in between 14 and 19 and the following pattern is ordained


18 11 15 14 17 19 16 10 12 20
−4
+2
+4
18 11 15 14 17 19 16 10 12 20
+6
−5
18 11 15 14 17 19 16 10 12 20
+6
−7

B. Find the Wrong Number

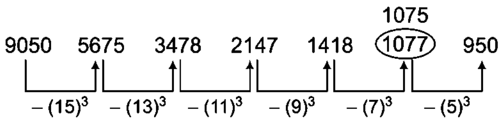
In this type of questions, a series of numbers is given which follow a certain pattern and one of its term is incorrect and does not fit into the series. The candidate is required to identify the pattern involved in the formation of series and then find out that number which does not follow the specific pattern of the series. This particular number is the wrong term in the series and is your required answer.

Directions (Example Nos. 28-30) In the following number series, only one number is wrong. Find out the wrong number.

***Ex* 28** 9050, 5675, 3478, 2147, 1418, 1077, 950

(a) 3478 (b) 1418 (c) 5675 (d) 1077

Sol. (*d*) The pattern is as follows

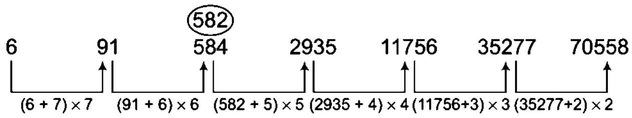

1075
9050
5675
3478
2147
1418
1077
950
− (15)³
− (13)³
− (11)³
− (9)³
− (7)³
− (5)³

Hence, 1077 is wrong number and should be replaced by 1075.

***Ex* 29** 6, 91, 2935, 11756, 35277, 70558

(a) 91 (b) 70558 (c) 584 (d) 2935

Sol. (*c*) The pattern is as follows

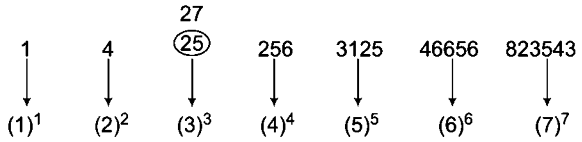

582
6
91
584
2935
11756
35277
70558
(6 + 7) × 7
(91 + 6) × 6
(582 + 5) × 5
(2935 + 4) × 4
(11756+3) × 3
(35277+2) × 2

Hence, 584 is wrong number and should be replaced by 582.

***Ex* 30** 1, 4, 25, 256, 3125, 46656, 823543

(a) 3125 (b) 823543 (c) 46656 (d) 25

Sol. (*d*) The pattern is as follows


27
1
4
25
256
3125
46656
823543
(1)¹
(2)²
(3)³
(4)⁴
(5)⁵
(6)⁶
(7)⁷

Hence, 25 is wrong number and should be replaced by 27.

Practice Corner **5.2**

Build your Confidence...

Directions (Q. Nos. 1-49) In each of the following questions, one number is wrong in the series. Find out the wrong number.

1. 1, 2, 5, 14, 41, 124
(a) 2 (b) 5 (c) 14 (d) 124

2. 1, 2, 6, 24, 120, 620, 5040
(a) 5040 (b) 620 (c) 120 (d) 24

3. 4, 10, 22, 40, 84, 94, 130
(a) 22 (b) 40 (c) 64 (d) 84

4. 4, 19, 49, 93, 154, 229, 319 **[Hotel Mgmt 2012]**
(a) 93 (b) 229 (c) 319 (d) 19

5. 3, 12, 36, 144, 431, 1728, 5184 **[MAT 2012]**
(a) 5184 (b) 36 (c) 144 (d) 431

6. 3, 5, 7, 12, 17, 19, 23 **[NIFT (UG) 2014]**
(a) 23 (b) 19 (c) 17 (d) 12

7. 3, 2, 8, 9, 13, 22, 18, 32, 23, 42 **[NIFT (PG) 2014]**
(a) 22 (b) 13 (c) 9 (d) 8

8. 1, 3, 8, 19, 42, 88, 184
(a) 3 (b) 8 (c) 19 (d) 88

9. 2, 4, 8, 16, 48, 64, 128, 256
(a) 4 (b) 8 (c) 16 (d) 48

10. 385, 462, 572, 396, 427, 671, 264 **[NIFT (UG) 2014]**
(a) 385 (b) 427 (c) 671 (d) 264

11. 4, 5, 7, 10, 14, 18, 25, 32 **[NIFT (UG) 2014]**
(a) 7 (b) 14 (c) 18 (d) 32

12. 1, 5, 9, 15, 25, 37, 49 **[NIFT (UG) 2014]**
(a) 25 (b) 37 (c) 9 (d) 15

13. 2, 10, 18, 54, 162, 486, 1458 **[SBI (PO) 2009]**
(a) 18 (b) 54
(c) 162 (d) 10
(e) 486

14. 2, 6, 12, 72, 865, 62208 **[IBPS (PO) 2011]**
(a) 72 (b) 12
(c) 62208 (d) 865
(e) 6

15. 66, 91, 120, 153, 190, 233, 276 **[IBPS (Clerk) 2011]**
(a) 120 (b) 233
(c) 153 (d) 276
(e) 190

16. 33, 321, 465, 537, 573, 590, 600 **[SBI (Clerk) 2011]**
(a) 321 (b) 465 (c) 573 (d) 537
(e) 590

17. 225, 289, 338, 374, 397, 415, 424
(a) 415 (b) 289 (c) 338 (d) 397

18. 8424, 4212, 2106, 1051, 526.5, 263.25, 131.625
[IBPS (PO) 2011]
(a) 131.625 (b) 1051 (c) 4212 (d) 8424
(e) 263.25

19. 8, 27, 64, 125, 218, 343 **[IDBI (PO) 2008]**
(a) 27 (b) 64 (c) 125 (d) 218
(e) 343

20. 7.5, 47.5, 87.5, 157.5, 247.5, 357.5, 487.5
[IBPS (Clerk) 2011]
(a) 357.5 (b) 87.5 (c) 157.5 (d) 7.5
(e) 47.5

21. 6, 12, 21, 32, 45, 60 **[SSC (FCI) 2011]**
(a) 6 (b) 12 (c) 21 (d) 35

22. 8, 27, 125, 343, 1331 **[SSC (FCI) 2011]**
(a) 8 (b) 343
(c) 1331 (d) None of these

23. 56, 72, 90, 110, 132, 150 **[SBI (PO) 2010]**
(a) 72 (b) 90 (c) 110 (d) 150
(e) None of these

24. 1236, 2346, 3456, 4566, 5686 **[SBI (PO) 2012]**
(a) 1236 (b) 3456 (c) 4566 (d) 5686
(e) None of these

25. 9, 16, 25, 36, 49, 61 **[SSC (Steno) 2012]**
(a) 16 (b) 9 (c) 49 (d) 61

26. 9, 14, 19, 25, 32, 40 **[EPFO 2012]**
(a) 14 (b) 25 (c) 32 (d) 9

27. 17, 36, ,53, 68, 83, 92 **[SSC (CGL) 2012]**
(a) 92 (b) 53 (c) 68 (d) 83

28. 10, 14, 28, 32, 64, 68, 132 **[CDS 2011]**
(a) 28 (b) 32 (c) 64 (d) 132

29. 2, 8, 3, 27, 4, 64, 5, 225 **[IB (ACIO) 2011]**
(a) 27 (b) 8 (c) 225 (d) 64

30. 1, 5, 5, 9, 7, 11, 11, 15, 12, 17

(a) 11
(b) 12
(c) 17
(d) 15
(e) None of these

31. 20, 40, 200, 400, 2000, 4000, 8000 **[Andhra Bank (Clerk) 2011]**

(a) 200
(b) 2000
(c) 8000
(d) 4000
(e) None of these

32. 2, 3, 9, 27, 112, 565, 3396 **[SSC (FCI) 2011]**

(a) 565
(b) 9
(c) 112
(d) 27

33. 75, 79, 72, 80, 69, 83, 66 **[SSC (FCI) 2011]**

(a) 79
(b) 83
(c) 69
(d) 72

34. 100, 97, 90, 86, 76, 71, 62, 55

(a) 55
(b) 62
(c) 76
(d) 86

35. 1, 4, 8, 16, 31, 64, 127, 256 **[UP B. Ed. 2011]**

(a) 31
(b) 16
(c) 8
(d) 6

36. 4, 5, 12, 38, 160, 805, 4836 **[SBI (Clerk) 2011]**

(a) 12
(b) 160
(c) 38
(d) 805
(e) 5

37. 3, 5, 13, 43, 176, 891, 5353 **[Canara Bank (Clerk) 2010]**

(a) 5
(b) 13
(c) 43
(d) 176
(e) 891

38. 49, 56, 64, 71, 81, 90, 100, 110

(a) 56
(b) 64
(c) 71
(d) 81

39. 4, 6, 18, 49, 201, 1011 **[Syndicate Bank (Clerk) 2010]**

(a) 1011
(b) 201
(c) 18
(d) 49
(e) 6

40. 18, 119, 708, 3534, 14136, 42405 **[LIC (ADO) 2011]**

(a) 708
(b) 3534
(c) 14136
(d) 42405
(e) 119

41. 5, 7.5, 11.25, 17.5, 29.75, 50, 91.25

(a) 7.5
(b) 17.5
(c) 29.75
(d) 91.25

42. 35, 118, 280, 600, 1238, 2504, 5036

(a) 118
(b) 280
(c) 600
(d) 1238

43. 10, 12, 28, 90, 368, 1840, 11112

(a) 1840
(b) 368
(c) 90
(d) 28
(e) 90

44. 7, 4, 5, 9, 20, 51, 160.5 **[SBI (Clerk) 2011]**

(a) 4
(b) 5
(c) 9
(d) 20
(e) 51

45. 1788, 892, 444, 220, 112, 52, 24 **[RBI (Grade 'B') 2011]**

(a) 52
(b) 112
(c) 220
(d) 444
(e) None of these

46. 7, 12, 40, 222, 1742, 17390, 208608 **[IBPS (PO) 2011]**

(a) 7
(b) 12
(c) 40
(d) 1742
(e) 208608

47. 80, 42, 24, 13.5, 8.75, 6.375, 5.1875 **[LIC (ADO) 2008]**

(a) 8.75
(b) 13.5
(c) 24
(d) 6.375
(e) 42

48. 2, 9, 32, 105, 436, 2195, 13182 **[IDBI Bank (PO) 2009]**

(a) 436
(b) 2195
(c) 9
(d) 32
(e) 105

49. 4, 2.5, 3.5, 6.5, 15.5, 41.25, 126.75 **[Canara Bank (PO) 2009]**

(a) 2.5
(b) 3.5
(c) 6.5
(d) 15.5
(e) 41.25

Response & Interpretations

1. (*d*) The pattern is as follows

$$1 \xrightarrow{+1} 2 \xrightarrow{+3} 5 \xrightarrow{+9} 14 \xrightarrow{+27} 41 \xrightarrow{+81} \overset{122}{\enclose{circle}{124}}$$

Hence,number 124 is wrong and should be replaced by 122.

2. (*b*) The pattern is as follows

$$1 \xrightarrow{\times 2} 2 \xrightarrow{\times 3} 6 \xrightarrow{\times 4} 24 \xrightarrow{\times 5} 120 \xrightarrow{\times 6} \overset{720}{\enclose{circle}{620}} \xrightarrow{\times 7} 5040$$

Hence, number 620 is wrong and should be replaced by 720.

3. (*d*) The pattern is as follows

$$4 \xrightarrow{+6} 10 \xrightarrow{+12} 22 \xrightarrow{+18} 40 \xrightarrow{+24} \overset{64}{\enclose{circle}{84}} \xrightarrow{+30} 94 \xrightarrow{+36} 130$$

Hence, number 84 is wrong and should be replaced by 64.

4. (*a*) The pattern is as follows

$$4 \xrightarrow{+15} 19 \xrightarrow{+30} 49 \xrightarrow{+45} \overset{94}{\enclose{circle}{93}} \xrightarrow{+60} 154 \xrightarrow{+75} 229 \xrightarrow{+90} 319$$

Hence, number 93 is wrong and should be replaced by 94

5. (*d*) The pattern is as follows

$$3 \xrightarrow{\times 4} 12 \xrightarrow{\times 3} 36 \xrightarrow{\times 4} 144 \xrightarrow{\times 3} \overset{32}{\enclose{circle}{431}} \xrightarrow{\times 4} 1728 \xrightarrow{\times 3} 5184$$

Hence, number 431 is wrong and should be replaced by 432.

6. (*a*) The pattern is as follows

$$3 \xrightarrow{+2} 5 \xrightarrow{+2} 7 \xrightarrow{+5} 12 \xrightarrow{+5} 17 \xrightarrow{+2} 19 \xrightarrow{+2} \enclose{circle}{23}$$

Hence, number 23 is wrong and should be replaced by 21.

7. (*c*) The given sequence is the combination of two series.

1. 3, 8, 13, 18, 23
2. 2, $\underset{12}{\enclose{circle}{9}}$, 22, 32, 42

The pattern (1) is (+5) and the pattern in (2) is (+10). So, in (2), number 9 is wrong and should be replaced by (2+10), *i.e.*, 12.

8. (*d*) The pattern is as follows

$$1 \xrightarrow{+2} 3 \xrightarrow{+5} 8 \xrightarrow{+11} 19 \xrightarrow{+23} 42 \xrightarrow{+47} \overset{89}{\enclose{circle}{88}} \xrightarrow{+95} 184$$

$$+2 \xrightarrow{+3} +5 \xrightarrow{+6} +11 \xrightarrow{+12} +23 \xrightarrow{+24} +47 \xrightarrow{+48} +95$$

Hence, number 88 is wrong and should be replaced by 89.

9. (*d*) The pattern is as follows

$$2 \xrightarrow{\times 2} 4 \xrightarrow{\times 2} 8 \xrightarrow{\times 2} 16 \xrightarrow{\times 2} \overset{32}{\enclose{circle}{48}} \xrightarrow{\times 2} 64 \xrightarrow{\times 2} 128 \xrightarrow{\times 2} 256$$

Hence, number 48 is wrong and should be replaced by 32.

10. (*b*) In this series, all the numbers are the multiples of 11, except the number 427 which is not a multiple of 11.

Hence, number 427 is wrong and should be replaced by the multiple of 11.

11. (*c*) The pattern is as follows

$$4 \xrightarrow{+1} 5 \xrightarrow{+2} 7 \xrightarrow{+3} 10 \xrightarrow{+4} 14 \xrightarrow{+5} \overset{19}{\enclose{circle}{18}} \xrightarrow{+6} 25 \xrightarrow{+7} 32$$

Hence, number 18 is wrong and should be replaced by 19.

12. (*d*) The pattern is as follows

$$\begin{array}{ccccccc} 1 & 5 & 9 & \overset{17}{\enclose{circle}{15}} & 25 & 37 & 49 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 1^2 & (2^2+1) & 3^2 & (4^2+1) & 5^2 & (6^2+1) & 7^2 \end{array}$$

Hence, number 15 is wrong and should be replaced by 17.

13. (*d*) The pattern is as follows

$$2 \xrightarrow{\times 3} \overset{6}{\enclose{circle}{10}} \xrightarrow{\times 3} 18 \xrightarrow{\times 3} 54 \xrightarrow{\times 3} 162 \xrightarrow{\times 3} 486 \xrightarrow{\times 3} 1458$$

Hence, number 10 is wrong and should be replaced by 6.

14. (*d*) The pattern is as follows

$$2 \xrightarrow{\times 3} 6 \xrightarrow{\times 2} 12 \xrightarrow{\times 6} 72 \xrightarrow{\times 12} \overset{864}{\enclose{circle}{865}} \xrightarrow{\times 72} 62208$$

Here, $3 \times 2 = 6$
$6 \times 2 = 12$
$12 \times 6 = 72$

Hence, number 865 is wrong and should be replaced by 864.

15. (*b*) The pattern is as follows

$$66 \xrightarrow{+25} 91 \xrightarrow{+29} 120 \xrightarrow{+33} 153 \xrightarrow{+37} 190 \xrightarrow{+41} \overset{231}{\enclose{circle}{233}} \xrightarrow{+45} 276$$

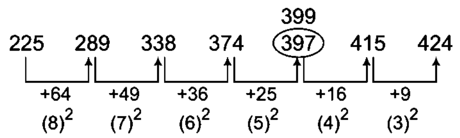
Hence, number 233 is wrong and should be replaced by 231.

16. (*e*) The pattern is as follows

$$33 \xrightarrow{+288} 321 \xrightarrow{+144} 465 \xrightarrow{+72} 537 \xrightarrow{+36} 573 \xrightarrow{+18} \overset{591}{\enclose{circle}{590}} \xrightarrow{+9} 600$$

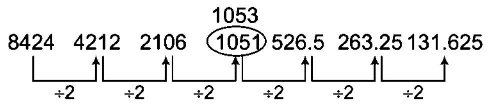
Hence, number 590 is wrong and should be replaced by 591.

17. (*d*) The pattern is as follows


399
225 289 338 374 397 415 424
+64 +49 +36 +25 +16 +9
(8)² (7)² (6)² (5)² (4)² (3)²

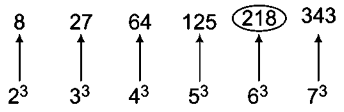
Hence, number 397 is wrong and should be replaced by 399.

18. (*b*) The pattern is as follows


1053
8424 4212 2106 1051 526.5 263.25 131.625
÷2 ÷2 ÷2 ÷2 ÷2 ÷2

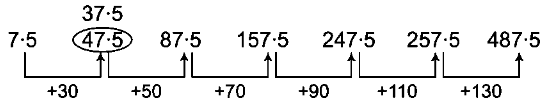
Hence, number 1051 is wrong and should be replaced by 1053.

19. (*d*) The pattern is as follows


8 27 64 125 218 343
2³ 3³ 4³ 5³ 6³ 7³

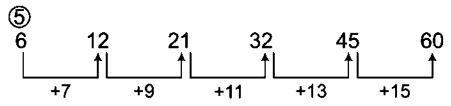
Hence, number 218 is wrong and should be replaced by 216

20. (*e*) The pattern is as follows


37·5
7·5 47·5 87·5 157·5 247·5 257·5 487·5
+30 +50 +70 +90 +110 +130

Hence, number 47.5 is wrong and should be replaced by 37.5.

21. (*a*) The pattern is as follows


⑤
6 12 21 32 45 60
+7 +9 +11 +13 +15

Hence, number 6 is wrong and should be replaced by 5.

22. (*d*) The numbers are cubes of prime numbers *i.e.*, 2^3, 3^3, 5^3, 7^3, 11^3. Clearly, none is wrong.

23. (*d*) The numbers are

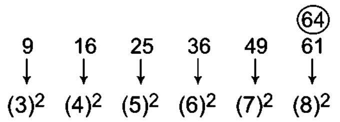
7 × 8, 8 × 9, 9 × 10, 10 × 11, 11 × 12 and 12 × 13.

Hence, number 150 is wrong and must be replaced by (12 × 13) *i.e.,* 156.

24. (*d*) The first digits of the numbers form the series 1, 2, 3, 4, 5, the second digits form the series 2, 3, 4, 5, 6 and the third digits form the series 3, 4, 5, 6, 7 while the last digit in each of the numbers is 6.

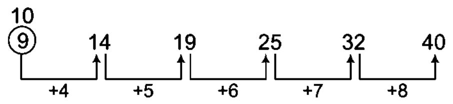
Hence, number 5686 is wrong and must be replaced by 5676.

25. (*d*) The pattern is as follows


64
9 16 25 36 49 61
(3)² (4)² (5)² (6)² (7)² (8)²

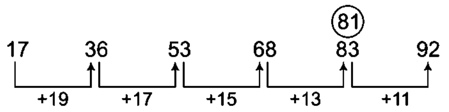
Hence, number 61 is wrong and should be replaced by 64.

26. (*d*) The pattern is as follows


10
9 14 19 25 32 40
+4 +5 +6 +7 +8

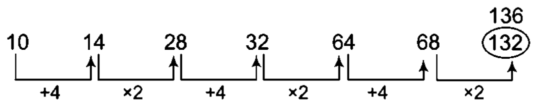
Hence, number 9 is wrong and should be replaced by 10.

27. (*d*) The pattern is as follows


81
17 36 53 68 83 92
+19 +17 +15 +13 +11

Hence, number 83 is wrong and should be replaced by 81.

28. (*d*) The pattern is as follows


136
10 14 28 32 64 68 132
+4 ×2 +4 ×2 +4 ×2

Hence, number 132 is wrong and should be replaced by 136.

29. (*c*) The pattern of the series is

$$2^3 = 8,\ 3^3 = 27,\ 4^3 = 64,\ 5^3 = 125$$

Hence, number 225 is wrong and should be replaced by 125.

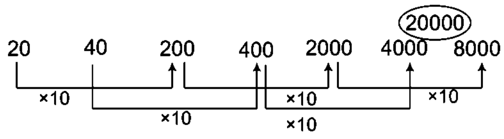
30. (*b*) The given sequence is a combination of two series

I. 1, 5, 7, 11, 12 II. 5, 9, 11, 15, 17

The pattern in both I and II is + 4, + 2, + 4, + 2.

Hence, number 12 is wrong and must be replaced by (11 + 2) *i.e.,* 13.

31. (*c*) The pattern is as follows

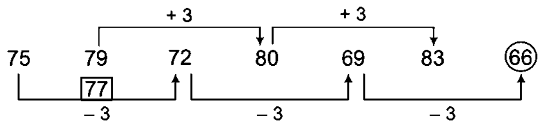

20000
20 40 200 400 2000 4000 8000
×10 ×10 ×10 ×10
×10 ×10

Hence, number 8000 is wrong and should be replaced by 20000.

32. (*b*) Series follows the pattern 2 × 1 + 1 = 3, 3 × 2 + 2 = 8, 8 × 3 + 3 = 27, 27 × 4 + 4 = 112 and so on.

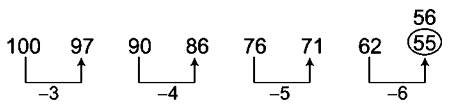
Hence, the number 9 is wrong and should be replaced by 8.

33. (*a*) The pattern is as follows


+ 3 + 3
75 79 72 80 69 83 66
77
– 3 – 3 – 3

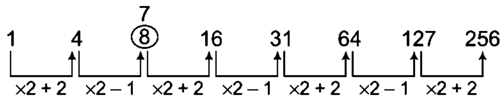
Hence, number 79 is wrong and should be replaced by 77.

34. (*a*) The pattern is as follows


56
100 97 90 86 76 71 62 55
–3 –4 –5 –6

Hence, number 55 is wrong and should be replaced by 56.

35. (*c*) The pattern is as follows


7
1 4 8 16 31 64 127 256
×2 + 2 ×2 – 1 ×2 + 2 ×2 – 1 ×2 + 2 ×2 – 1 ×2 + 2

Hence, number 8 is wrong and should be replaced by 7.

36. (*c*) The pattern is as follows

39
4 5 12 38 160 805 4836
$\times1+1$ $\times2+2$ $\times3+3$ $\times4+4$ $\times5+5$ $\times6+6$

Hence, number 38 is wrong and should be replaced by 39.

37. (*d*) The pattern is as follow

177
3 5 13 43 176 891 5353
$\times1+2$ $\times2+3$ $\times3+4$ $\times4+5$ $\times5+6$ $\times6+7$

Hence, number 176 is wrong and should be replaced by 177.

38. (*c*) The pattern is as follows

$(7)^2$ $(8)^2$ 72 $(9)^2$ $(10)^2$
49 56 64 71 81 90 100 110
+16 +18 +20

Terms at odd places are $7^2, 8^2, 9^2, 10^2$ and terms at even places are 56, 72, 90, 110 *i.e.*, with differences of 16, 18 and 20.
Hence, number 71 is wrong and should be replaced by 72.

39. (*c*) The pattern is as follows

15
4 6 18 49 201 1011
$\times1+2$ $\times2+3$ $\times3+4$ $\times4+5$ $\times5+6$

Hence, number 18 is wrong and should be replaced by 15.

40. (*b*) The pattern is as follows

3535
18 119 708 3534 14136 42405
$\times7-7$ $\times6-6$ $\times5-5$ $\times4-4$ $\times3-3$

Hence, number 3434 is wrong and should be replaced by 3535.

41. (*c*) The pattern is as follows

28.75
5 7.5 11.25 17.5 29.75 50 91.25
+2.5 +3.75 +6.25 +11.25 +21.25 +41.25
+1.25 +2.5 +5 +10 +20
$\times2$ $\times2$ $\times2$ $\times2$

Hence, number 29.75 is wrong and should be replaced by 28.75.

42. (*d*) The pattern is as follows

1236
35 118 280 600 1238 2504 5036
+83 +162 +320 +636 +1268 +2532
$\times2-4$ $\times2-4$ $\times2-4$ $\times2-4$ $\times2-4$

Hence, number 1238 is wrong and should be replaced by 1236.

43. (*a*) The pattern is as follows

1850
10 12 28 90 368 1840 11112
$\times1+2$ $\times2+4$ $\times3+6$ $\times4+8$ $\times5+10$ $\times6+12$

Hence, number 1840 is wrong and should be replaced by 1850.

44. (*e*) The pattern is as follows

52·5
7 4 5 9 20 51 160·5
$\times\frac{1}{2}+\frac{1}{2}$ $\times1+1$ $\times\frac{3}{2}+\frac{3}{2}$ $\times2+2$ $\times\frac{5}{2}+\frac{5}{2}$ $\times3+3$

Hence, number 51 is wrong and should be replaced by 52.5.

45. (*b*) The pattern is follows

108
1788 892 444 220 $\boxed{112}$ 52 24
$\div2-2$ $\div2-2$ $\div2-2$ $\div2-2$ $\div2-2$ $\div2-2$

Hence, number 112 is wrong and should be replaced by 108.

46. (*d*) The pattern is as follows

$$7\times2-2\times1=12$$
$$12\times4-(4\times2)=40$$
$$40\times6-(6\times3)=222$$
$$222\times8-(8\times4)=1742=1744$$
$$1744\times10-(10\times5)=17390$$
$$17390\times12-(12\times6)=208608$$

Hence, number 1742 is wrong and should be replaced by 1744.

47. (*c*) The pattern is as follows

23
80 42 24 13.5 8.75 6.375 5.1875
$\times\frac{1}{2}+2$ $\times\frac{1}{2}+2$ $\times\frac{1}{2}+2$ $\times\frac{1}{2}+2$ $\times\frac{1}{2}+2$ $\times\frac{1}{2}+2$

Hence, number 24 is wrong and should be replaced by 23.

48. (*d*) The pattern is as follows

30
2 9 32 105 436 2195 13182
$\times1+(1\times7)$ $\times2+(2\times6)$ $\times3+(3\times5)$ $\times4+(4\times4)$ $\times5+(5\times3)$ $\times6+(6\times2)$

Hence, number 32 is wrong and should be replaced by 30.

49. (*c*) The pattern is as follows

6.75
4 2.5 3.5 6.5 15.5 41.25 126.75
$\times\frac{1}{2}+\frac{1}{2}$ $\times1+1$ $\times\frac{3}{2}+\frac{3}{2}$ $\times2+2$ $\times\frac{5}{2}+\frac{5}{2}$ $\times3+3$

Hence, number 6.5 is wrong and should be replaced by 6.75.

Type 2 Letter Series

Letter series is a sequence of letters taken from English alphabet and such sequence follows a certain logical pattern. In terms of letter series, certain logical pattern means that every next element of the series is obtained according to a certain change. In this series, candidates are required to find out the next letter in the series or the missing letter in the series or letter which is wrong in the series.

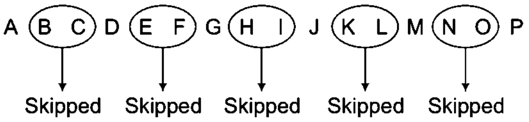
To solve problems of this kind candidates are required to find the rules followed in the series and determine the pattern of the series.

Let us consider following series to determine the pattern involved

A, D, G, J, M , P

It is clear that in the above series every next element is three letters (+ 3) forward from its previous element or we can say that every next element is obtained by skipping two letters in forward alphabetical order.

Following diagram will give you a better idea about the series pattern



As letter series is based on letters of English alphabet, we must have some basic information about English alphabet.

English Alphabet

In the previous chapters, the detailed information of English alphabet has already been given but here we again refresh them in concise way. *Let us remember that English alphabet has*

- 26 letters.
- 5 vowels (A, E, I, O and U) and 21 consonants.
- 13 letters in first half *i.e.,* A to M.
- 13 letters in second half *i.e.,* N to Z.

Corresponding Positions of Letters

- *Forward Order Corresponding Positions*

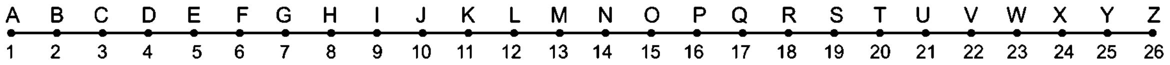
Letters	A	B	C	D	E	F	G	H	I	J	K	L	M
Corresponding positions	1	2	3	4	5	6	7	8	9	10	11	12	13
Letters	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Corresponding positions	14	15	16	17	18	19	20	21	22	23	24	25	26

- *Reverse Order Corresponding Positions*

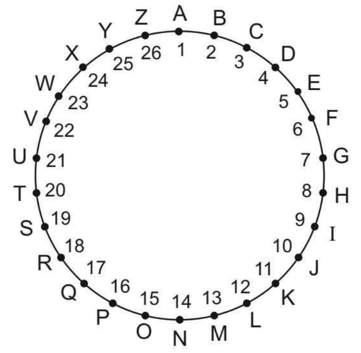
Letters	A	B	C	D	E	F	G	H	I	J	K	L	M
Corresponding positions	26	25	24	23	22	21	20	19	18	17	16	15	14
Letters	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Corresponding positions	13	12	11	10	9	8	7	6	5	4	3	2	1

Letters of English alphabet can be arranged in the following two ways

(i) **Linear Arrangement** Under such arrangement letters are arranged along a straight line.



(ii) **Circular Arrangement** Under such arrangement letters are arranged along a circle.



If we have to find out the letter just next to A, then that letter would be B. This result can be found out from either linear or circular arrangement of letters but when we have to find out the letter coming just after Z, then linear arrangement does not work. In this case, we have to take help of circular arrangement. It is clear that in circular arrangement, the letter coming just after Z is A.

Now, based on the various patterns involved in the formation of alphabet series, these series can be classified into following types

A. Addition Series

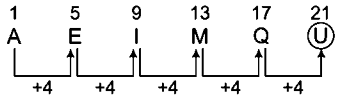
In such series, every next term is obtained by adding certain digit/number (either same or different) to the corresponding position of previous letter given in a particular series.

***Ex* 31** Find the letter in place of question mark (?) in the series given below.

A, E, I, M, Q, ?

(a) V (b) T (c) U (d) W

Sol. (c) Every next term is obtained by adding 4 to the corresponding position of its previous term (letter).



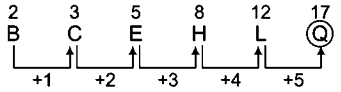
∴ Required letter = U

***Ex* 32** What comes in place of question mark (?) in the series given below?

B, C, E, H, L, ?

(a) M (b) N (c) P (d) Q

Sol. (*d*) Every next letter in the series is obtained by adding 1, 2, 3, 4 and 5, respectively to the corresponding position of its previous term (letter).



∴ Required letter = Q

B. Subtraction Series

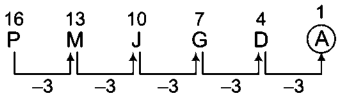
In such series, every next term is obtained by subtracting certain digit/number (either same or different) from its previous term (letter).

***Ex* 33** Replace the question mark (?) in the following series with appropriate letter.

P, M, J, G, D, ?

(a) A (b) C (c) B (d) E

Sol. (*a*) Every next term is obtained by subtracting 3 from the corresponding position of its previous term (letter).



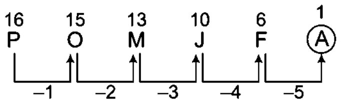
∴ Required letter = A

***Ex* 34** What comes in place of question mark (?) in the following series?

P, O, M, J, F, ?

(a) X (b) A (c) Y (d) Cannot be determined

Sol. (*b*) Every next term of the series is obtained by subtracting 1, 2, 3, 4 and 5, respectively from its corresponding position.



∴ Required letter = A

C. Addition-Subtraction Series

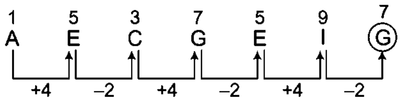
In such series, addition and subtraction (or subtraction-addition) take place alternatively to obtain the terms of the series.

***Ex* 35** What comes in place of question mark (?) in the following series?

A, E, C, G, E, I, ?

(a) H (b) E (c) G (d) J

Sol. (*c*) Every next term is obtained by addition and subtraction of 4 and 2 alternately.



∴ Required letter = G

D. Series having More Than One Part

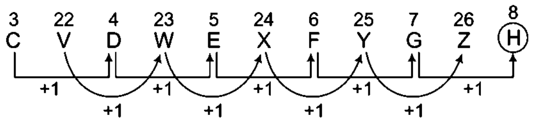
Such series have two or more interwoven series. In another words, we can say that a single series is formed with the combination of more than one series.

***Ex* 36** What comes in place of question mark (?) in the series given below ?

C, V, D, W, E, X, F, Y, G, Z, ?

(a) I (b) H (c) K (d) M

Sol. (*b*) This series has two parts and every next term of both the parts is obtained by adding 1 to the corresponding position of its previous term (letter).



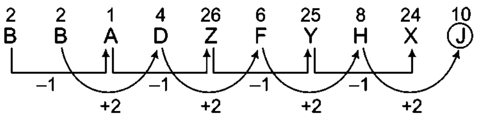
∴ Required letter = H

***Ex* 37** Replace the question mark (?) in the series given below.

B, B, A, D, Z, F, Y, H, X, ?

(a) J (b) N (c) M (d) O

Sol. (*a*) This series has two parts. In first part, every next term is obtained by subtracting 1 from the corresponding position of its previous letter. While in second part, every next term is obtained by adding 2 to the corresponding position of its previous term (letter).



∴ Required letter = J

E. Reverse Order Repetition Series

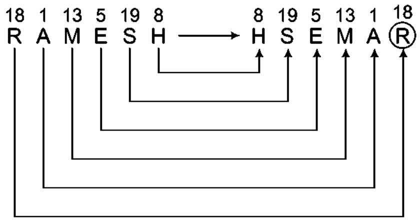
In such series, first part is written in reverse order in the second part of the series and this process may be repeated further.

***Ex* 38** What comes in place of question mark (?) in the series given below?

R, A, M, E, S, H, H, S, E, M, A, ?

(a) Z (b) Y (c) R (d) W

Sol. (c) The first part of the series (R, A, M, E, S, H) is written in reverse order (H, S, E, M, A, R) in the second part.



∴ Required letter = R

➘ (i) The above series can also be given as follows

R, A, M, E, S, H, S, E, M, A, R

Note that here the last letter (H) of the first part (R, A, M, E, S, H) is common in both first part and second part (H, S, E, M, A, R).

(ii) Letters of the first part (R, A, M, E, S, H) may go forward or backward to form the second part.

F. Series Having Group of Letters as its Elements

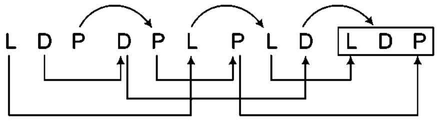
In such series, each element consists of group of letters instead of a single letter.

***Ex* 39** What comes in place of question mark (?) in the series given below?

LDP, DPL, PLD,?

(a) LPD (b) PDL (c) DLP (d) LDP

Sol. (*d*) In every next term, the last letter is the first letter of its previous term, middle letter is the last letter of its previous term and first letter is the middle letter of its previous term.



∴ Required letter= LDP

***Ex* 40** What comes in place of question mark (?) in the series given below?

LMD, MKG, NIJ, ?

(a) PKM (b) MGO (c) LGM (d) OGM

Sol. (*d*) In every next term first letter goes one letter forward, second letter goes two letters backward and third letter goes three letters forward.

1st Letter : $\overset{12}{L} \xrightarrow{+1} \overset{13}{M} \xrightarrow{+1} \overset{14}{N} \xrightarrow{+1} \boxed{\overset{15}{O}}$

2nd Letter : $\overset{13}{M} \xrightarrow{-2} \overset{11}{K} \xrightarrow{-2} \overset{9}{I} \xrightarrow{-2} \boxed{\overset{7}{G}}$

3rd Letter : $\overset{4}{D} \xrightarrow{+3} \overset{7}{G} \xrightarrow{+3} \overset{10}{J} \xrightarrow{+3} \boxed{\overset{13}{M}}$

∴ Required element = OGM

G. Frequency Series

In such series, frequency of occurrence of a letter increases/decreases in every next element.

***Ex* 41** Replace the question mark (?) in the following series.

L, LL, LLLL, LLLLLLL, ?

(a) LLLLLLLL (b) LLLLLLLLLLL (c) LLLLLLLLL (d) LLLLLLLLLL

Sol. (*b*) In every next element 1, 2, 3 and 4 L's are added, respectively to the previous term.

$$\text{L} \xrightarrow{+\text{L}} \text{LL} \xrightarrow{+2\text{L}} \text{LLLL} \xrightarrow{+3\text{L}} \text{LLLLLL} \xrightarrow{+4\text{L}} \text{LLLLLLLLLLL}$$

∴ ? = LLLLLLLLLLL

***Ex* 42** What comes in place of question mark (?) in the series given below?

MNO, MMNO, MMNNO, MMNNOO, ?

(a) MMNNOOP (b) MMNNOODD (c) MMMNNOO (d) MMMNNNOOO

Sol. (*c*) According to the following pattern

From 1st to 2nd element, one M is added → MMNO

From 2nd to 3rd element, one N is added → MMNNO

From 3rd to 4th element, one O is added → MMNNOO

From 4th to 5th element, one M is added → MMMNNOO

∴ Required element = MMMNNOO

H. Small-Cap Series

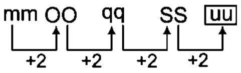
In such series, the sequence consists of small and capital letters in various patterns.

***Ex* 43** Replace the question mark (?) in the given series.

mm, OO, qq, SS, ?

(a) Sq (b) Rs (c) St (d) uu

Sol. (*d*) The sequence will be as follows



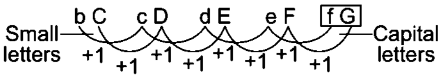
Here, the letters occur in pairs and are written small and capital in alternate manner and in every next term, the letters move two positions forward from the previous term.

***Ex* 44** What comes in place of question mark (?) in the series given below?

bC, cD, dE, eF, ?

(a) fG (b) gH (c) I (d) fg

Sol. (*a*) Here, the pattern of series is a as follows



∴ Required term = fG

Practice Corner **5.3**

Build your Confidence...

Directions (Q. Nos. 1-41) What comes in place of question mark(s) in the following letter series?

1. K, A, M, A, L, L, A, M, A, ?
(a) L (b) M (c) K (d) J

2. A, C, E, G, I, ?
(a) K (b) J (c) M (d) L

3. P, N, L, J, ?, F, D
(a) K (b) H (c) L (d) C

4. Y, X, V, S, O, ?
(a) J (b) M (c) E (d) F

5. A, D, G, J, M, P, ? **[SSC (10+2) 2008]**
(a) Q (b) R (c) T (d) S

6. Z, X, U, Q, L, ? **[SSC (10+2) 2010]**
(a) F (b) E (c) G (d) H

7. Z, X, ?, N, F **[RRB (TC/CC) 2011]**
(a) T (b) R (c) Q (d) O

8. L, N, R, Z, ? **[Hotel Mgmt 2012]**
(a) E (b) J (c) P (d) O

9. B, D, F, I, L, P, ? **[SBI (PO) 2011]**
(a) U (b) R (c) S (d) T
(e) None of these

10. W, U, S, P, M, I, ? **[SBI (PO) 2010]**
(a) E (b) A (c) H (d) F
(e) None of these

11. C, E, I, K, O, Q, ? **[BOI (Clerk) 2011]**
(a) R (b) S (c) T (d) U
(e) None of these

12. R, O, L, I, F, ?, Z **[NIFT (PG) 2013]**
(a) A (b) C (c) E (d) I

13. ABC, PQR, DEF, STU, ? **[SSC (CGL) 2014]**
(a) GKL (b) VWX
(c) GHI (d) IJK

14. ACE, BDF, CEG, ? **[SSC (CGL) April 2014]**
(a) DFE (b) DEF
(c) DFH (d) DEH

15. PMK, MPK, MKP, KMP, ? **[MAT 2012]**
(a) PMK (b) KMP
(c) MPK (d) KPM

16. PRIMARILY, RIMARILY, RIMARIL, ? **[OBC (Clerk) 2011]**
(a) IMAR (b) RIMARI (c) IMARIL
(d) RIMA (e) None of these

17. NATURAL, NATURA, ATURA, ? **[SBI (PO) 2010]**
(a) ATUR (b) TURA (c) RUTA (d) ARUT
(e) None of these

18. CD, HI, MN, ? **[UP PSC 2013]**
(a) QS (b) OP (c) PQ (d) RS

19. YW, US, ?, MK **[SSC (CPO) 2013]**
(a) RP (b) BD (c) FH (d) QO

20. DF, GJ, KM, NQ, RT, ? **[MAT 2013]**
(a) UX (b) UW (c) YZ (d) XZ

21. ZXV, TRP, NLJ, ? **[SSC (CPO) 2010]**
(a) IGF (b) HDF (c) HGE (d) HFD

22. POQ, SRT, VUW, ? **[CLAT 2014]**
(a) XYZ (b) XZY (c) YZY (d) YXZ

23. XYZ, ABC, UVW, DEF, RST, GHI, ? **[SSC (10+2) 2008]**
(a) UVW (b) JKL (c) OPQ (d) NOP

24. PBA, QDC, RFE, ? **[UP B.Ed. 2011]**
(a) SHG (b) OAB (c) TJI (d) ULK

25. XWA, VTC, SPF, OKJ, ? **[SBI (PO) 2010]**
(a) JDN (b) JEO (c) LPN (d) JDP
(e) None of these

26. CIG, FLJ, IOM, ? **[SSC (FCI) 2012]**
(a) LRP (b) JLG (c) PSU (d) QUB

27. OTE, PUF, QVG, RWH, ? **[MAT 2013]**
(a) SYJ (b) TXI (c) SXJ (d) SXI

28. AZY, EXW, IVU, ? **[SSC (10+2) 2011]**
(a) MTS (b) MQR (c) NRQ (d) LST

29. XYZ, XZY, YZX, ?, ZXY **[MAT 2013]**
(a) XZZ (b) YXZ (c) YZW (d) ZYX

30. DKM, FJP, HIS JHV, ? **[SSC (CPO) 2013]**
(a) LGY (b) HGY (c) IGZ (d) IGY

31. BFG, HLM, NRS, ? **[SSC (FCI) 2012]**
(a) TWX (b) RVW (c) TYZ (d) TXY

32. FUGT, HSIR, JQKP, ? **[SSC (FCI) 2011]**
(a) KNLO (b) LNNM (c) LOMM (d) LOMN

33. Y, ?, ?, M, I, E **[MAT 2010]**
(a) Z, X (b) P, R (c) Q, T (d) U, Q

34. W, T, P, M, I, F, B, ?, ? **[SSC (CPO) 2012]**
(a) Z, V (b) X, U (c) Y, U (d) Y, V

35. AYBZC, DWEXF, GUHVI, JSKTL, ? **[SSC (LDC) 2011]**
(a) MQORN (b) QMONR (c) MQNRO (d) NQMOR

36. A, Z, C, X, E, ? **[UP B.Ed. 2010]**
(a) U (b) W (c) V (d) Y

37. A, P, C, Q, E, R, G, ?, ? **[RRB (ASM) 2012]**
(a) S, I (b) H, I (c) I, S (d) T, J

38. DD, jjj, PP, vvv, B ?
(a) BB (b) B (c) C (d) CC

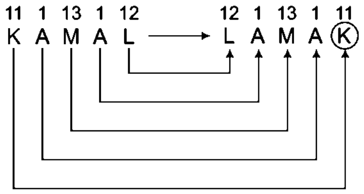
39. Qx Di ? p
(a) M (b) m (c) l (d) L

40. s n ? V ? H ? f E B b B
(a) Kay (b) KjY (c) KJY (d) KgY

41. ? p Lis ? lw Q O ? U
(a) fNb (b) BFn (c) fNc (d) Hbn

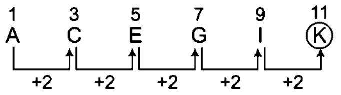
Response & Interpretations

1. (*c*) Here, the reverse order repetition pattern is followed


11 1 13 1 12
K A M A L
12 1 13 1 11
L A M A K

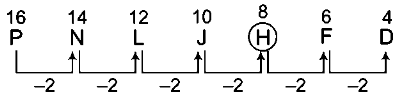
∴ ? = K

2. (*a*) Every next term is obtained by adding 2 to the corresponding position of its previous term (letter).


1 3 5 7 9 11
A C E G I K
+2 +2 +2 +2 +2

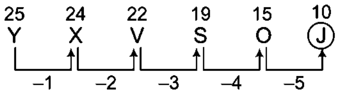
∴ ? = K

3. (*b*) Every next term is obtained by subtracting 2 from the corresponding position of its previous term (letter).


16 14 12 10 8 6 4
P N L J H F D
−2 −2 −2 −2 −2 −2

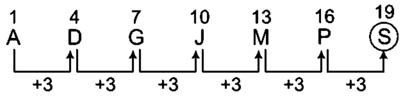
∴ ? = H

4. (*a*) Every next term is obtained by subtracting 1, 2, 3, 4 and 5 respectively from its corresponding position.


25 24 22 19 15 10
Y X V S O J
−1 −2 −3 −4 −5

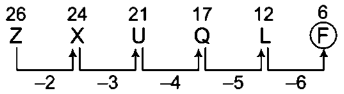
∴ ? = J

5. (*d*) The pattern is as follows


1 4 7 10 13 16 19
A D G J M P S
+3 +3 +3 +3 +3 +3

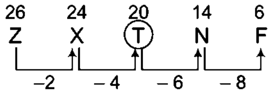
∴ ? = S

6. (*a*) The pattern is as follows


26 24 21 17 12 6
Z X U Q L F
−2 −3 −4 −5 −6

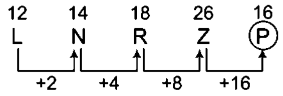
∴ ? = F

7. (*a*) The pattern is as follows


26 24 20 14 6
Z X T N F
−2 −4 −6 −8

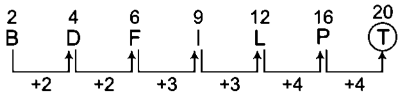
∴ ? = T

8. (*c*) The pattern is as follows


12 14 18 26 16
L N R Z P
+2 +4 +8 +16

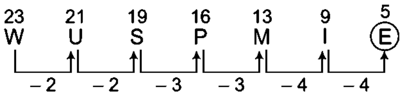
∴ ? = P

9. (*d*) The pattern is as follows


2 4 6 9 12 16 20
B D F I L P T
+2 +2 +3 +3 +4 +4

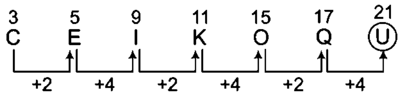
∴ ? = T

10. (*a*) The pattern is as follows


23 21 19 16 13 9 5
W U S P M I E
−2 −2 −3 −3 −4 −4

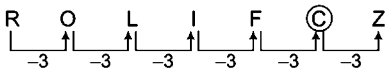
∴ ? = E

11. (*d*) The pattern is as follows


3 5 9 11 15 17 21
C E I K O Q U
+2 +4 +2 +4 +2 +4

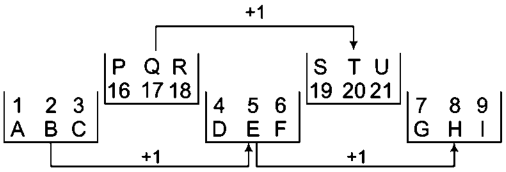
∴ ? = U

12. (*b*) The pattern is as follows


R O L I F © Z
–3 –3 –3 –3 –3 –3

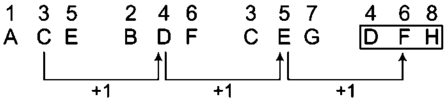
∴ ? = C

13. (*c*) The pattern is as follows


+1
P Q R
16 17 18
S T U
19 20 21
1 2 3
A B C
4 5 6
D E F
7 8 9
G H I
+1
+1

∴ ? = GHI

14. (*c*) The pattern is as follows


1 3 5
A C E
2 4 6
B D F
3 5 7
C E G
4 6 8
D F H
+1 +1 +1

∴ ? = DFH

15. (*d*) First two letters and last two letters interchange their positions alternately.

∴ ? = KPM

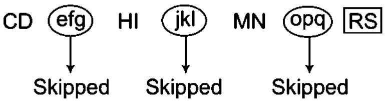
16. (*c*) First and last letters disappear alternately.

∴ ? = IMARIL

17. (*a*) Last and first letters get disappear alternately.

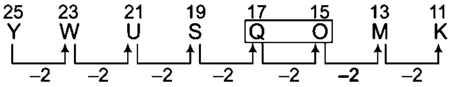
∴ ? = ATUR

18. (*d*) Here, three letters are skipped between each term of the series.


CD efg HI jkl MN opq RS
Skipped Skipped Skipped

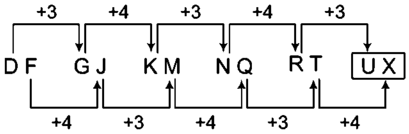
∴ ? = RS

19. (*d*) The pattern is as follows


25 23 21 19 17 15 13 11
Y W U S Q O M K
–2 –2 –2 –2 –2 –2 –2

∴ ? = QO

20. (*a*) The pattern is as follows


+3 +4 +3 +4 +3
DF GJ KM NQ RT UX
+4 +3 +4 +3 +4

∴ ? = UX

21. (*d*) The pattern is as follows

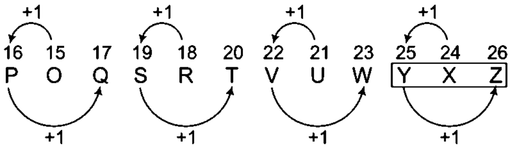
1st Letter : $\overset{26}{Z} \xrightarrow{-6} \overset{20}{T} \xrightarrow{-6} \overset{14}{N} \xrightarrow{-6} \overset{8}{H}$

2nd Letter : $\overset{24}{X} \xrightarrow{-6} \overset{18}{R} \xrightarrow{-6} \overset{12}{L} \xrightarrow{-6} \overset{6}{F}$

3rd Letter : $\overset{22}{V} \xrightarrow{-6} \overset{16}{P} \xrightarrow{-6} \overset{10}{J} \xrightarrow{-6} \overset{4}{D}$

∴ ? = HFD

22. (*d*)


+1 +1 +1 +1
16 15 17 19 18 20 22 21 23 25 24 26
P O Q S R T V U W Y X Z
+1 +1 +1 +1

∴ ? = YXZ

23. (*c*) Considering odd places elements first.

1st Letter : $\overset{24}{X} \xrightarrow{-3} \overset{21}{U} \xrightarrow{-3} \overset{18}{R} \xrightarrow{-3} \overset{15}{O}$

2nd Letter : $\overset{25}{Y} \xrightarrow{-3} \overset{22}{V} \xrightarrow{-3} \overset{19}{S} \xrightarrow{-3} \overset{16}{P}$

3rd Letter : $\overset{26}{Z} \xrightarrow{-3} \overset{23}{W} \xrightarrow{-3} \overset{20}{T} \xrightarrow{-3} \overset{17}{Q}$

Considering even place elements secondly.

1st Letter : $\overset{1}{A} \xrightarrow{+3} \overset{4}{D} \xrightarrow{+3} \overset{7}{G}$

2nd Letter : $\overset{2}{B} \xrightarrow{+3} \overset{5}{E} \xrightarrow{+3} \overset{8}{H}$

3rd Letter : $\overset{3}{C} \xrightarrow{+3} \overset{6}{F} \xrightarrow{+3} \overset{9}{I}$

∴ ? = OPQ

24. (*a*) The pattern is as follows

1st Letter : $\overset{16}{P} \xrightarrow{+1} \overset{17}{Q} \xrightarrow{+1} \overset{18}{R} \xrightarrow{+1} \overset{19}{S}$

2nd Letter : $\overset{2}{B} \xrightarrow{+2} \overset{4}{D} \xrightarrow{+2} \overset{6}{F} \xrightarrow{+2} \overset{8}{H}$

3rd Letter : $\overset{1}{A} \xrightarrow{+2} \overset{3}{C} \xrightarrow{+2} \overset{5}{E} \xrightarrow{+2} \overset{7}{G}$

25. (*b*) The pattern is as follows

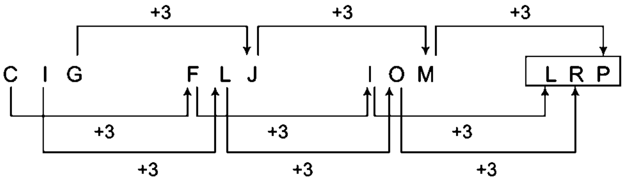
1st Letter : $\overset{24}{X} \xrightarrow{-2} \overset{22}{V} \xrightarrow{-3} \overset{19}{S} \xrightarrow{-4} \overset{15}{O} \xrightarrow{-5} \overset{10}{J}$

2nd Letter : $\overset{23}{W} \xrightarrow{-3} \overset{20}{T} \xrightarrow{-4} \overset{16}{P} \xrightarrow{-5} \overset{11}{K} \xrightarrow{-6} \overset{5}{E}$

3rd Letter : $\overset{1}{A} \xrightarrow{+2} \overset{3}{C} \xrightarrow{+3} \overset{6}{F} \xrightarrow{+4} \overset{10}{J} \xrightarrow{+5} \overset{15}{O}$

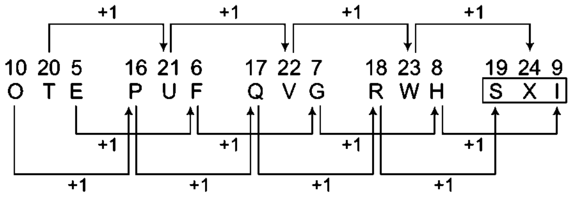
∴ ? = JEO

26. (*a*) The pattern is as follows


+3 +3 +3
C I G F L J I O M L R P
+3 +3 +3
+3 +3 +3

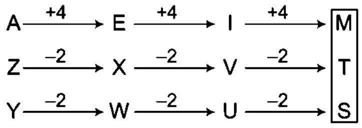
∴ ? = LRP

27. (*d*) The pattern is as follows


+1 +1 +1 +1
10 20 5 16 21 6 17 22 7 18 23 8 19 24 9
O T E P U F Q V G R W H S X I
+1 +1 +1 +1
+1 +1 +1 +1

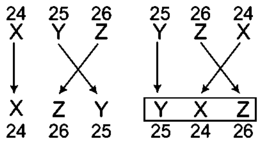
∴ ? = SXI

28. (*a*) The pattern is as follows


A +4 E +4 I +4 M
Z −2 X −2 V −2 T
Y −2 W −2 U −2 S

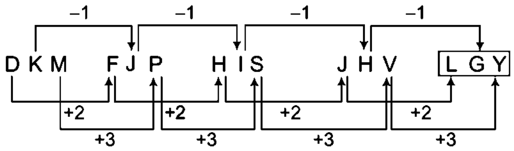
∴ ? = MTS

29. (*b*) The pattern is as follows


24 25 26 X Y Z
25 26 24 Y Z X
26 24 25 Z X Y
X Z Y 24 26 25
Y X Z 25 24 26

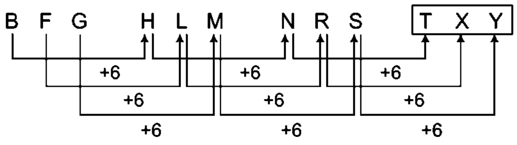
∴ ? = YXZ

30. (*a*) The pattern is as follows


−1 −1 −1 −1
D K M F J P H I S J H V L G Y
+2 +2 +2 +2
+3 +3 +3 +3

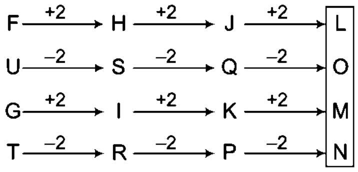
∴ ? = LGY

31. (*d*) The pattern is as follows


B F G H L M N R S T X Y
+6 +6 +6
+6 +6 +6
+6 +6 +6

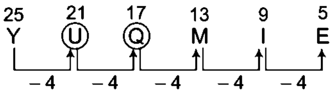
∴ ? = TXY

32. (*d*) The pattern is as follows


F +2 H +2 J +2 L
U −2 S −2 Q −2 O
G +2 I +2 K +2 M
T −2 R −2 P −2 N

∴ ? = LOMN

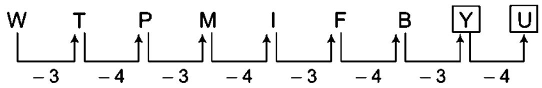
33. (*d*) The pattern is as follows


25 21 17 13 9 5
Y U Q M I E
− 4 − 4 − 4 − 4 − 4

∴ First (?) = U and second (?) = Q

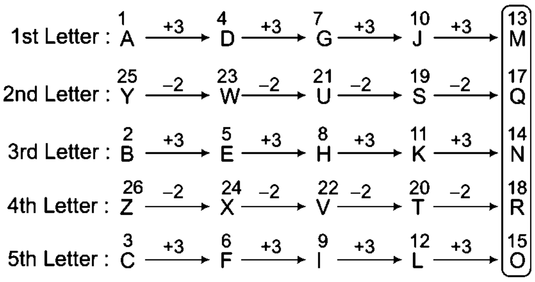
∴ Required answer = U, Q

34. (*c*) The pattern is as follows


W T P M I F B Y U
− 3 − 4 − 3 − 4 − 3 − 4 − 3 − 4

∴ Required answer = Y, U

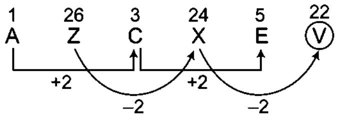
35. (*c*) The pattern is as follows


1st Letter : 1 A +3 4 D +3 7 G +3 10 J +3 13 M
2nd Letter : 25 Y −2 23 W −2 21 U −2 19 S −2 17 Q
3rd Letter : 2 B +3 5 E +3 8 H +3 11 K +3 14 N
4th Letter : 26 Z −2 24 X −2 22 V −2 20 T −2 18 R
5th Letter : 3 C +3 6 F +3 9 I +3 12 L +3 15 O

∴ ? = MQNRO

36. (*c*) There are two interwoven series.

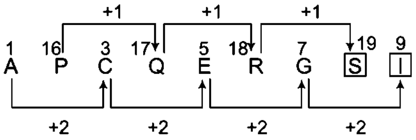
The pattern is as follows


1 A 26 Z 3 C 24 X 5 E 22 V
+2 +2
−2 −2

∴ ? = V

37. (*a*) There are two interwoven series.

The pattern is as follows

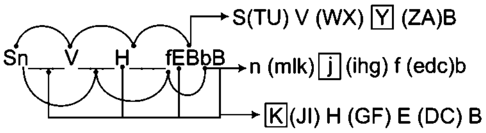

+1 +1 +1
1 A 16 P 3 C 17 Q 5 E 18 R 7 G 19 S 9 I
+2 +2 +2 +2

∴ Required answer = S, I

38. (*b*) The series progresses as D (efghi) j (klmno) P (qrstu) v (wxyza) B . The capital letters are repeated twice, while small letters are repeated thrice.

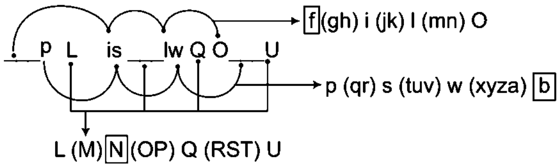
39. (*a*) The series is: Q(rstuvw) x (yzabc) D (efgh)i (jkl) M (no) P.

40. (*b*) The pattern is as follows


S(TU) V (WX) Y (ZA)B
Sn V H fEBbB
n (mlk) j (ihg) f (edc)b
K(JI) H (GF) E (DC) B

∴ Required answer = KjY

41. (*a*) The pattern is as follows


f(gh) i (jk) l (mn) O
p L is lw Q O U
p (qr) s (tuv) w (xyza) b
L (M)N(OP) Q (RST) U

∴ Required answer = fNb

Type 3 Alpha-Numeric Series

Alpha-numeric series comprises of both, the letters and numbers which are presented in jumbled format but each of them follow certain pattern based on either the alphabetical position of the letters or the numbers in different correlation etc., but the importance of this topic lies in expanding the skills of the candidates who are required to recognise the pattern in both manner and complete the series by inserting the missing number or detecting the wrong number in the series.

Separate Series of Letters/Numbers

In this type of series, letters and numbers both exist simultaneously but series of letters is associated only with letters and series of numbers is associated only with numbers.

***Ex* 45** Replace the question mark (?) with suitable option.

P 1 F, R 2 E, T 6 D, V 24 C, ?

(a) X 120 B (b) Y 100 C (c) Y 120 B (d) X 120 C

Sol. (*a*) Pattern of given alpha-numeric series is as follows

$$\begin{array}{ll} \text{Letter} & P \xrightarrow{+2} R \xrightarrow{+2} T \xrightarrow{+2} V \xrightarrow{+2} \boxed{X} \\ \text{Number} & 1 \xrightarrow{\times 2} 2 \xrightarrow{\times 3} 6 \xrightarrow{\times 4} 24 \xrightarrow{\times 5} \boxed{120} \\ \text{Letter} & F \xrightarrow{-1} E \xrightarrow{-1} D \xrightarrow{-1} C \xrightarrow{-1} \boxed{B} \end{array}$$

∴ ? = X 120 B

Combined Series of Letters and Numbers

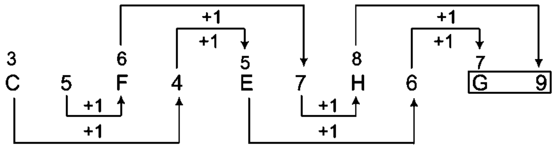
In this type of series, letters and numbers both exist simultaneously and the series of letters is associated with the series of numbers in a particular manner.

***Ex* 46** Replace the question mark (?) in the following series with suitable option.

C5, F4, E7, H6, ?

(a) 8G (b) G9 (c) F9 (d) D7

Sol. (*b*) Pattern of given alpha-numeric series is as follows



∴ ? = G9

Practice Corner 5.4

Build your Confidence...

Directions (Q. Nos. 1-23) What should come in the place of question mark (?) in the following alpha-numeric series?

1. C-3, E-5, G-7, I-9, ?, ? **[SSC (CGL) 2013]**
(a) X-24, M-21 (b) K-11, M-13 (c) O-15. X-24 (d) M-18, K-14

2. 2B, 4C, 8E, 14H, ?
(a) 22 L (b) 16 K (c) 20 L (d) 22 L

3. 3F, 6G, 11I, 18L,?
(a) 27P (b) 25N
(c) 27Q (d) 21'O'

4. P3C, R5F, T8I, V12L, ? **[IDBI Bank (Clerk) 2009]**
(a) X16'O' (b) Y17'O' (c) X17M (d) X 17'O'
(e) None of these

5. 1CV, 5FU,9IT, ? 170R
(a) 11LS (b) 14JS (c) 15JS (d) 13LS

6. C4X, F9U, I16R, ?
(a) L25P (b) K25P (c) L27P (d) L25O

7. KM5, IP8, GS11, EV14,?
(a) BY17 (b) CZ17 (c) BX17 (d) CY17

8. Z9A, X7D, ?, T3J, R1M
(a) W6F (b) S3H (c) G9V (d) V5G

9. Q1F, S2E, U6D, W24C,?
(a) Y120B (b) Y44B (c) Z88B (d) Y66B

10. ST39, UV43, WX47, ?
(a) YZ47 (b) YZ52 (c) YZ51 (d) YX50

11. 2Z5, 7Y7, 14X9, 23W11, 34V13, ? **[MAT 2013]**
(a) 27U24 (b) 47U15 (c) 45U15 (d) 47V14

12. G13T, I11R, L9 0, ?
(a) POK (b) P5L (c)P5J (d) P7K

13. AB 11 CD, EF 13 GH, IJ 17 KL, ? **[MAT 2013]**
(a) MN18 OP (b) MN19 OP (c) MN 21 OP (d) MN 23 OP

14. T49S64, R81Q100, P121O144, ? **[MAT 2013]**
(a) N169M196 (b) N160M190 (c) N164M194 (d) U36T46

15. B_2CD, ?, BCD_4, ?, BC_6D **[IIFT 2013]**
(a) B C_3D, B_5CD (b) B C_2D, B C_3D
(c) B C_3D, C_3CD (d) B C_3D, BC_5D

16. P3, M8, ?, G24, D35 **[IIFT 2013]**
(a) K15 (b) J13 (c) I13 (d) J15

17. A1, C3, F6, J10, O15, ? **[CLAT 2014]**
(a) U21 (b) V21 (c) T20 (d) U20

18. CO3KP, DO4KQ, EO5KR, FO6KS ? **[SSC (Steno) 2013, March 2014]**
(a) GO7KP (b) GO6KT (c) GO6KP (d) GO7KT

19. 27 CD 72, 26 FG 62, 25 IJ 52, ?, 23 OP 32 **[MAT 2014]**
(a) 24 KI 42 (b) 24 LM 42 (c) 24 LM 42 (d) 24 MN 42

20. 86 XW 68, 85 UT 58, 84 RQ 48, ?, 82 LK 28 **[MAT 2014]**
(a) 83 ON 38 (b) 83 PO 38 (c) 83 RP 38 (d) 83 NO 38

21. BA 2500 ZY, DC 1600 XW, FE 900 VU, ?, JI 100 RQ **[MAT 2014]**
(a) GH 600 ST (b) HG 400 TS
(c) HG 500 TS (d) HG 300 TS

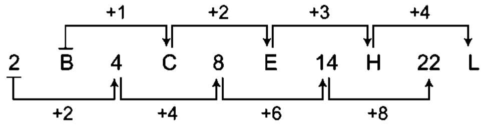
22. 31 MN 97, 37 PQ 89, 41 ST 83, ?, 47 YZ 73 **[MAT 2014]**
(a) 43 VW 79 (b) 45 VW 80
(c) 43 VW 81 (d) 44 YW 82

23. 71 XW 13, 67 UT 17, ?, 59 ON 23, 53 LK 29 **[MAT 2014]**
(a) 65 RQ 18 (b) 63 RQ 19
(c) 61 RQ 19 (d) 60 RQ 126

Response & Interpretations

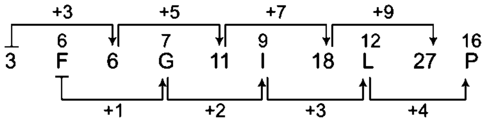
1. (*b*) In this series, every letter is given its alphabetical position number and one letter is skipped in between each term. Hence, the missing terms are K-11 and M-13.

2. (*a*) Pattern of given alpha-numeric series is as follows


+1 +2 +3 +4
2 B 4 C 8 E 14 H 22 L
+2 +4 +6 +8

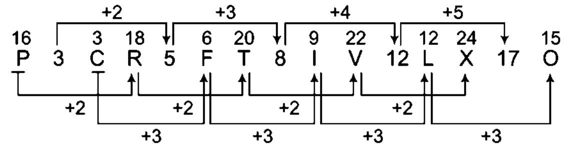
∴ ? = 22 L

3. (*a*) Pattern of given alpha-numeric series is as follows


+3 +5 +7 +9
6 7 9 12 16
3 F 6 G 11 I 18 L 27 P
+1 +2 +3 +4

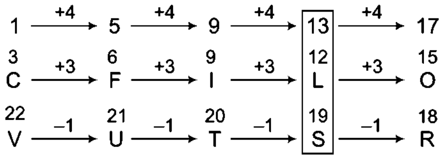
∴ ? = 27P

4. (*d*) Pattern of given alpha-numeric series is as follows


+2 +3 +4 +5
16 3 18 6 20 9 22 12 24 15
P 3 C R 5 F T 8 I V 12 L X 17 O
+2 +2 +2 +2
+3 +3 +3 +3

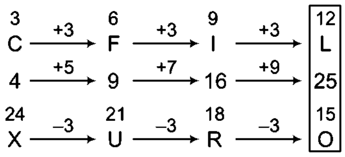
∴ ? = X17O

5. (*d*) Pattern of given alpha-numeric series is as follows


1 +4 5 +4 9 +4 13 +4 17
3 C +3 6 F +3 9 I +3 12 L +3 15 O
22 V −1 21 U −1 20 T −1 19 S −1 18 R

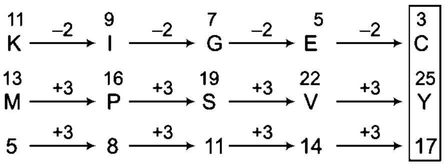
∴ ? = 13 LS

6. (*d*) Pattern of given alpha-numeric series is as follows


3 C +3 6 F +3 9 I +3 12 L
4 +5 9 +7 16 +9 25
24 X −3 21 U −3 18 R −3 15 O

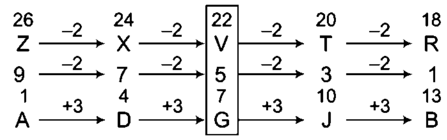
∴ ? = L 25 O

7. (*d*) Pattern of given alpha-numeric series is as follows


11 K −2 9 I −2 7 G −2 5 E −2 3 C
13 M +3 16 P +3 19 S +3 22 V +3 25 Y
5 +3 8 +3 11 +3 14 +3 17

∴ ? = C Y 17

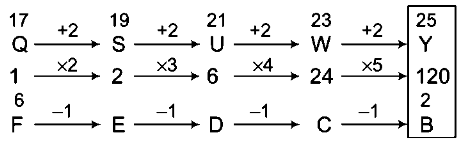
8. (*d*) Pattern of given alpha-numeric series is as follows



26 Z −2 24 X −2 22 V −2 20 T −2 18 R
9 −2 7 −2 5 −2 3 −2 1
1 A +3 4 D +3 7 G +3 10 J +3 13 B

∴ ? = V 5 G

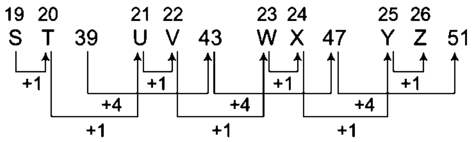
9. (*a*) Pattern of given alpha-numeric series is as follows



17 Q +2 19 S +2 21 U +2 23 W +2 25 Y
1 ×2 2 ×3 6 ×4 24 ×5 120
6 F −1 E −1 D −1 C −1 2 B

∴ ? = Y 120

10. (*c*) Pattern of given alpha-numeric series is as follows

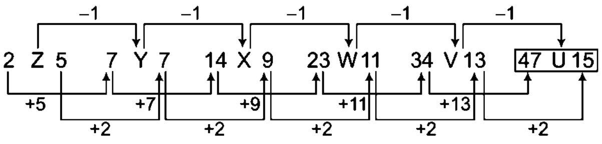


19 20 S T 39 21 22 U V 43 23 24 W X 47 25 26 Y Z 51
+1 +1 +1 +1
+4 +4 +4
+1 +1 +1

Also, 19+ 20 =39, 21 + 22 = 43, 23 + 24 = 47
S T U V W X

and 25 + 26= 51
Y ∴ ? = Y Z 51

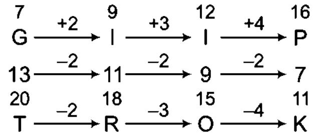
11. (*b*) Pattern of given alpha numeric series is as follows



−1 −1 −1 −1 −1
2 Z 5 7 Y 7 14 X 9 23 W 11 34 V 13 47 U 15
+5 +7 +9 +11 +13
+2 +2 +2 +2 +2

∴ ? = 47 U 15

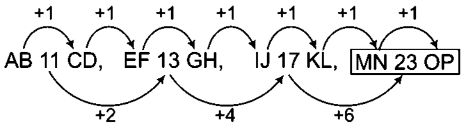
12. (*d*) Pattern of given alpha numeric series is as follows



7 G +2 9 I +3 12 L +4 16 P
13 −2 11 −2 9 −2 7
20 T −2 18 R −3 15 O −4 11 K

∴ ? = P 7 K

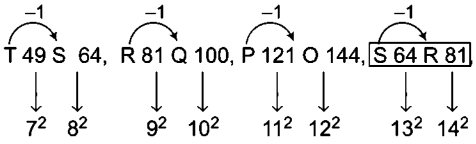
13. (*d*) The pattern is as follows



+1 +1 +1 +1 +1 +1 +1
AB 11 CD, EF 13 GH, IJ 17 KL, MN 23 OP
+2 +4 +6

∴ ? = MN230P

14. (*a*) The pattern is as follows



−1 −1 −1 −1
T 49 S 64, R 81 Q 100, P 121 O 144, S 64 R 81
7² 8² 9² 10² 11² 12² 13² 14²

∴ ? = N169M196

15. (*a*) In this problem, we can see the number in the next term is increasing by 1 and it is also changing the position alphabetically. Hence, the series would be

B_2CD, BC_3D, BCD_4, B_5CD, BC_6D

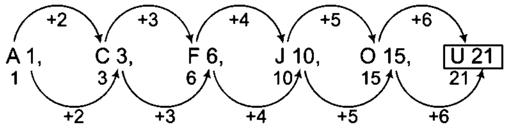
∴ ?, ? = BC_3D, B_5CD

16. (*a*) Pattern of given alpha-numeric series is as follows

In this, the numbers are increasing and also the difference is increasing by (2). Similarly, position of M and P has the difference of 3. Hence, the alphabet 'J' will be in the blank space to maintain the difference.

∴ ? = J15

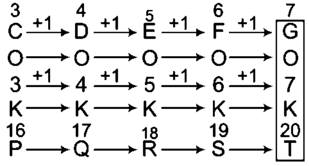
17. (*a*) Pattern of given alpha-numeric series is as follows



+2 +3 +4 +5 +6
A 1, C 3, F 6, J 10, O 15, U 21
1 3 6 10 15 21
+2 +3 +4 +5 +6

∴ ? = U21

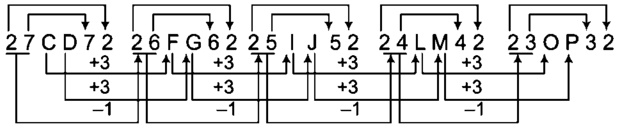
18. (*d*) Pattern of given alpha-numeric series is as follows



3 C +1 4 D +1 5 E +1 6 F +1 7 G
O O O O O
3 +1 4 +1 5 +1 6 +1 7
K K K K K
16 P 17 Q 18 R 19 S 20 T

∴ ? = GO7KT

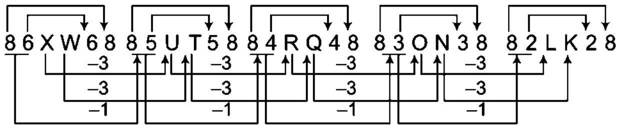
19. (*b*) Pattern of given alpha-numeric series is as follows



2 7 C D 7 2 2 6 F G 6 2 2 5 I J 5 2 2 4 L M 4 2 2 3 O P 3 2
+3 +3 +3 +3
+3 +3 +3 +3
−1 −1 −1 −1

∴ ? = 24 LM 42

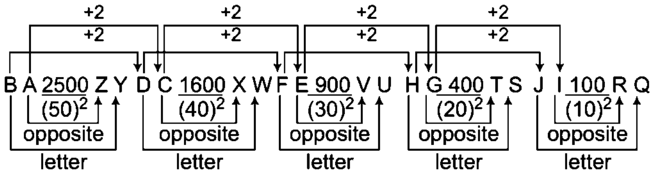
20. (*a*) Pattern of given alpha-numeric series is as follows



8 6 X W 6 8 8 5 U T 5 8 8 4 R Q 4 8 8 3 O N 3 8 8 2 L K 2 8
−3 −3 −3 −3
−3 −3 −3 −3
−1 −1 −1 −1

∴ ? = 83 ON 38

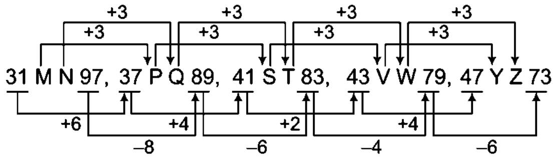
21. (*b*) Pattern of given alpha-numeric series is as follows



+2 +2 +2 +2
+2 +2 +2 +2
B A 2500 Z Y D C 1600 X W F E 900 V U H G 400 T S J I 100 R Q
(50)² (40)² (30)² (20)² (10)²
opposite letter opposite letter opposite letter opposite letter opposite letter

∴ ? = HG 400 TS

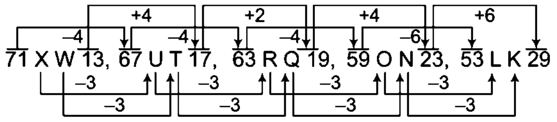
22. (*a*) Pattern of given alpha-numeric series is as follows



+3 +3 +3 +3
+3 +3 +3 +3
31 M N 97, 37 P Q 89, 41 S T 83, 43 V W 79, 47 Y Z 73
+6 +4 +2 +4
−8 −6 −4 −6

∴ ? = 43 VW 79

23. (*b*) Pattern of given alpha-numeric series is as follows



+4 +2 +4 +6
−4 −4 −4 −6
71 X W 13, 67 U T 17, 63 R Q 19, 59 O N 23, 53 L K 29
−3 −3 −3 −3
−3 −3 −3 −3

∴ ? = 63 RQ 19

Type 4 Continuous Pattern Series

Continuous pattern series generally consists of small letters of English alphabet where the letters are arranged following a certain pattern. However, some letters are missing from the series. The candidate is required to identify the pattern and accordingly find the proper sequence of these missing letters from the given alternatives.

Following example will give you a better idea about the type of questions

Directions (Example Nos. 47-49) Find the missing term in the following series.

***Ex* 47** _ aa_ba_bb_ab_aab

(a) aaabb (b) babab (c) bbaab (d) None of these

Sol. (c) The series is as follows baab/baab/baab/baab

∴ Required answer = bbaab

***Ex* 48** a_bc_c_abb_bca_

(a) abbba (b) accba (c) cccbc (d) cbbac

Sol. (*b*) The series is as follows aabcc/ccabb/bbcaa

∴ Required answer = accba

***Ex* 49** l_n_mllm_n_l

(a) mnmn (b) mnnm (c) mnmm (d) nmmm

Sol. (*b*) The series is as follows lmn/nml/lmn/nml

∴ Required answer = mnnm

The sequence is a repeated pattern of two alternative blocks lmn and nml.

Multi-tier Sequential Series

This series comprises of three series with three different elements namely capital letters, digits and small letters that correspond to each other in some way. On the basis of the similarity of positions in the series, a capital letter has to be found out that corresponds with a unique digit and unique small letter. The candidate is required to find out this correspondence for all the elements of the series and on that basis choose the elements which are to be filled at the desired place.

***Ex* 50** Find the missing term in the following series .

C B _ _ D _ B A B C C B
_ _ 1 2 4 3 _ _ ? ? ? ?
a _ a b _ c _ b _ _ _ _

(a) 3, 4, 4, 3 (b) 3, 2, 2, 3 (c) 3, 1, 1, 3 (d) 1, 4, 4, 1

Sol. (c) By analysing and comparing the positions of the elements of all the three tiers / sequences given in the question, we get

A = b = 2, B = c = 3, C= a =1, D = d = 4

We find 'a' corresponds to 'C' and '1' corresponds to 'a'. So, 'a' and '1' correspond to 'C'. 'b' corresponds to 'A' and '2' corresponds to b. So, 'b' and '2' correspond to A. Also, we find, '4' corresponds to 'D'. So, the remaining number '3' corresponds to 'B'.

C B C A D B B A B C C B
1 3 1 2 4 3 3 2 □□□□
a c a b d c c b c a a c

So, BCCB corresponds to 3113.

∴ Required answer = 3,1,1,3

Practice Corner **5.5**

Build your Confidence...

Directions (Q. Nos. 1-25) In each of the following letter series, some of the letters are missing which are given in that order as one of the alternatives below it. Select the correct alternative.

1. ac_ga_eg_ce_ **[SSC (CGL) 2011]**
(a) dbag (b) ecag (c) deag (d) ebdg

2. ba_ b_aab_a_b
(a) abaa (b) abba (c) baab (d) babb

3. a_c_ ba_ca_cb **[SSC (10+2) 2012]**
(a) abcc (b) acba (c) bcaa (d) bcba

4. b_ab_ b_aab_b **[SSC (CGL) 2013]**
(a) abbb (b) abba (c) baaa (d) aaba

5. ac_cab_baca_aaa_aba **[SSC (CPO) 2011]**
(a) aabc (b) aacb (c) babb (d) bcbb

6. a_ cacbc_ baca_ _ b
(a) baba (b) babc (c) abab (d) cacb

7. cccbb_aa_cc_bbbaa_c
(a) acbc (b) baca (c) baba (d) aaba

8. _OPQ N_PQ NO_ Q NOP_ **[SSC (Steno) 2012]**
(a) ONQP (b) NOQP (c) NOPQ (d) PQNO

9. a_ ba _ bb _ ab_ a **[SSC (10+2) 2012]**
(a) baab (b) aaba (c) abab (d) baaa

10. _bc_ca_aba_c_ca
(a) bcbba (b) babac (c) bbcba (d) abcbb

11. _b_baaabb_a_ _bb_a_ **[RRB (ASM) 2012]**
(a) abbaaba (b) ababbaa (c) babaaba (d) baabaab

12. _sr_tr_srs_r_srst_ **[SSC (CGL) 2011]**
(a) ttssrr (b) tsrtsr (c) strtrs (d) tstttr

13. ab_aa_aaa_a_ab_a **[SSC (CPO) 2005]**
(a) abbab (b) abaaa (c) aabba (d) abbaa

14. a_b_ba_ _ b_ ba **[SSC (Constable) 2010]**
(a) bbaab (b) bbabb (c) aabab (d) aabba

15. a_b_abb_ab_a_bba **[SSC (10+2) 2010]**
(a) bbaab (b) babba (c) baaba (d) aabba

16. _bb_c_bg _b_ g **[SSC (10+2) 2011]**
(a) cbgbc (b) cgbcb (c) cgbcc (d) gbcbb

17. _A′B_ B′AA′ _ BB′ _ A **[SSC (FCI) 2012]**
(a) A′BAB′ (b) A′B′AB (c) ABAB (d) AB′A′B

18. a_ba_c_aad_aa_ea **[SSC (CGL) 2012]**
(a) babbb (b) babbd (c) babbc (d) bacde

19. _zy_zxy_yxzx_zyx_xy **[SSC (Steno) 2011]**
(a) yxzyz (b) zxyzy (c) yzxyx (d) xyzzy

20. aa_aabb_b_aa_aabb_bb **[UP B.Ed. 2011]**
(a) bbbaa (b) bbbba (c) aabbb (d) babba

21. a_b_a_ _ n _ bb _ abbn **[SSC (Constable) 2010]**
(a) abnabb (b) bnbban (c) bnbbna (d) babban

22. a_b_c_a _ bc _b _cb **[SSC (Multitasking) 2013]**
(a) acbcab (b) ccbcca (c) ccaccb (d) cacabe

23. pqr_ _ rs _ rs _ _ s_ q_ **[SSC (FCI) 2012]**
(a) spqpprr (b) pqrrppq (c) sqppqpr (d) sqprrqr

24. mnonopqopqrs _ _ _ _ _ _
(a) mnopqr (b) oqrstu (c) pqrstu (d) qrstup

25. abc_yabc_xw abcdev_ **[SBI (PO) 2011]**
(a) zdu (b) d x u (c) c d u (d) z y w
(e) None of these

Directions (Q. Nos. 26-27) In each of the following questions, three sequence of letters/ numerals are given which corresponds to each other in some way. In each question, you have to find out the letter/numerals that come in the vacant place marked by question mark (?) These are given as one of the four alterative under the question. Choose the correct answer as instructed.

26. C_B_D_A_BBDD
2_ _4 _ 3 4 _ ? ? ? ?
_ a_ c b a_ d _ _ _ _
(a) 2, 2, 1, 1 (b) 2, 2, 3, 3
(c) 3, 3, 4, 4 (d) 3, 3, 1, 1

27. _ ADACB _ _ BDCC
1 3 _ _ 1242 _ _ _ _
a _ _ b_ _ c d ? ? ? ?
(a) a, c, d, d (b) a, d, c, c
(c) c, a, d, d (d) d, c, a, a

Response & Interpretations

1. (*b*) Series pattern : aceg/aceg/aceg/aceg
∴ Required answer = ecag

2. (*b*) Series pattern : baab/baab/baab/baab
∴ Required answer = abba

3. (*d*) abc/cba/bca/acb ⇒ bcba

4. (*d*) Series pattern : baabab/baabab/baabab
∴ Required answer = aaba

5. (*a*) aca / cab / aba / cab / aaa / cab / a
∴ Required answer = aabc

6. (*b*) Series pattern : abcac/bcaba/cabcb
∴ Required answer = babc

7. (*b*) Series pattern : cccbbbaaa/cccbbbaaa/c
∴ Required answer = baca

8. (*c*) NOPQ/NOPQ/NOPQ/NOPQ
∴ Required answer = NOPQ

9. (*a*) ab ba/ a bb a/abb a
∴ Required answer = baab

10. (*c*) Series pattern : abc/bca/cab/abc/bca
∴ Required answer = abcbb

11. (*a*) abb / baa / abb / baa / abb / baa
∴ Required answer =abbaaba

12. (*d*) Series pattern : tsr/str/tsr/str/tsr/str
∴ Required answer = tstttr

13. (*d*) Series pattern : abaa/abaa/abaa/ abaa
∴ Required answer = abbaa

14. (*b*) Series pattern : abb/bba/abb/bba
∴ Required answer = bbabb

15. (*c*) Series pattern : abba/abba/abba/abba
∴ Required answer = baaba

16. (*b*) cb bg /cb bg/c bbg
∴ Required answer = cgbcg

17. (*c*) AA′ B/BB′A/A′AB/B′ BA
∴ Required answer = ABAB

18. (*d*) abba/acca/adda/aeea
∴ Required answer = bacde

19. (*a*) yzy/xzx/yzy/xzx/yzy/xzx/y
∴ Required answer = yxzyz

20. (*d*) a a b aa/ bb a bb/ aa b aa / bb a bb
∴ Required answer=babba

21. (*b*) Series pattern : abbn/abbn/abbn/abbn
∴ Required answer = bnbban

22. (*b*) a c b/c c b/a c b/c c b/ a c b
∴ Required answer = ‘ccbcca’

23. (*c*) Series pattern p q r s/ q r s p/ r s p q/s p q r
∴ Required answer = sqppqpr

24. (*c*) Series pattern : mno/nopq/opqrs/p q r s t u
∴ Required answer =pqrstu

25. (*a*) abczy / abcdxw / abcdevu
∴ Required answer = zdu

26. (*d*) Clearly, ‘2’ corresponds to ‘C’ and ‘4’ corresponds to ‘A’. So ‘1’ and ‘3’ correspond to ‘B’ and ‘D’.
Thus, the missing sequence is 1, 1, 3, 3 or 3, 3,1, 1.

27. (*d*) Clearly, ‘b’ corresponds to ‘A’, ‘1’ corresponds to ‘C’ and ‘a’ corresponds to ‘2’. So, ‘d’ corresponds to ‘B’. So, the remaining letter ‘C’ corresponds to ‘D’.
Thus, BDCC corresponds to d, c, a, a.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-38) Find the missing number in the series given below.

1. 16, 22, 34, 58, 106, ?, 394
(a) 178 (b) 175 (c) 288 (d) 202

2. 10, 33, 102, 309, ? **[SSC (Steno) 2013]**
(a) 1030 (b) 1050 (c) 928 (d) 930

3. 121, 112, ?, 97, 91, 86
(a) 102 (b) 108 (c) 99 (d) 104

4. 3, 11, 23, 39, ? **[NIFT (PG) 2013]**
(a) 58 (b) 59 (c) 60 (d) 61

5. 31, 13, 45, 54, ?, 63 **[SSC (Steno) 2013]**
(a) 36 (b) 54 (c) 61 (d) 58

6. 8, 27, 64, ? **[SSC (Steno) 2013]**
(a) 216 (b) 224 (c) 64 (d) 125

7. 1, 3, 7 13, 21, 31, 43, ? **[SSC (Multitasking) 2013]**
(a) 55 (b) 57 (c) 59 (d) 61

8. 975, 864, 753, 642, ?
(a) 431 (b) 314 (c) 531 (d) 532

9. 3, 4, 7, 11, 18, 29, ?
(a) 31 (b) 39 (c) 43 (d) 47

10. 0, 0,1, 1, 2, 3, 5, 8, 13, 21, ? **[CLAT 2013]**
(a) 34 (b) 35 (c) 33 (d) 36

11. 285, 253, 221, 189,? **[SSC (Steno) 2013]**
(a) 122 (b) 153 (c) 157 (d) 151

12. 7, 8, 11, 16, 23, ? **[SSC (10 + 2) 2013]**
(a) 31 (b) 32 (c) 37 (d) 40

13. 5, 6, 9, 14, 21, ? **[SSC (10 + 2) 2013]**
(a) 28 (b) 30 (c) 31 (d) 29

14. 26, 37, 50, 65, ?, 101
(a) 77 (b) 80 (c) 81 (d) 82

15. 758, 753, 748, 744, 740, 736, ?
(a) 732 (b) 733
(c) 734 (d) 735

16. 6, 42, ?, 1260, 5040, 15120, 30240 **[IBPS (PO) 2011]**
(a) 546 (b) 424 (c) 252 (d) 328
(e) None of these

17. 17, 43, 81, 131, ?
(a) 375 (b) 468 (c) 300 (d) 193

18. 30, 68, 130, 222, ?, 520, 738 **[SSC (CGL) 2013]**
(a) 420 (b) 350 (c) 250 (d) 280

19. 19, 429, 32, 57, 52, 392, 46, ?
(a) 56 (b) 18 (c) 9 (d) 3

20. 15, 17, 20, 22, 27, 29, ?, ?
(a) 31, 38 (b) 36, 38 (c) 36, 43 (d) 38, 45

21. 90, 61, 52, 63, 94, ?, 18
(a) 72 (b) 46 (c) 54 (d) 81

22. 8, 24, 12, ?, 18, 54
(a) 28 (b) 36 (c) 46 (d) 38

23. 48, 24, 72, 36, 108, ? **[UP PSC 2012]**
(a) 115 (b) 216 (c) 121 (d) 54

24. 875, 874, 866, 839, 775, 650, 434, ?
(a) 322 (b) 281 (c) 91 (d) 18

25. 3, 5, 7, ?, 13, 17, 19, 23 **[Indian Bank (Clerk) 2009]**
(a) 9 (b) 11 (c) 8 (d) 10
(e) None of these

26. 823543, 46656, 3125, 256, ?, 4, 1
(a) 28 (b) 27 (c) 36 (d) 49

27. 14, 16, 35, 109, 441, ?
(a) 2651 (b) 2205 (c) 2315 (d) 2211

28. 4, 18, ?, 100, 180, 240. **[IB (ACIO) 2013]**
(a) 32 (b) 36
(c) 48 (d) 40

29. 3, 22, ?, 673, 2696, 8093
(a) 133 (b) 155
(c) 156 (d) 134

30. 4, 9, 20, 43,? **[CMAT 2003]**
(a) 90 (b) 84 (c) 96 (d) 95

31. 5, 11, 23, 47, 95, ? **[SSC (CGL) 2013]**
(a) 190 (b) 191 (c) 161 (d) 169

32. 1, 3, 7, 15, 31, ? **[SSC (10+2) 2013]**
(a) 37 (b) 36 (c) 73 (d) 63

33. 7, 8, 24, 105, 361, ? **[IBPS (PO) 2010]**
(a) 986 (b) 617 (c) 486 (d) 1657
(e) None of these

34. 2, 3, 4, 9, 3, 4, 5, 12, 4, 5, 6, 15, 2, ?, 7, 18 **[NIFT (UG) 2013]**
(a) 8 (b) 7 (c) 6 (d) 9

35. 2, 29, 38, 47, ? **[SSC (CGL) 2013]**
(a) 59 (b) 56
(c) 52 (d) 58

36. 2, 9, 23, 3, 8, 25, 4, ?, 27
(a) 7 (b) 29
(c) 23 (d) 14

37. 13 (168) 13, 14(181) 13, 15 (?) 13
(a) 190 (b) 196
(c) 195 (d) 194

38. 2, 8, 18, 32, 50, ? **[SSC (10+2)2013]**
(a) 64 (b) 72
(c) 70 (d) 68

Directions (Q. Nos. 39-61) In each of these questions, a number series is given. In each series, only one number is wrong. Find out the wrong number.

39. 6 7 9 13 26 37 69
(a) 7 (b) 26 (c) 69 (d) 37
(e) None of these

40. 87, 54, 28, 13, 5, 2, 2
(a) 28 (b) 54 (c) 13 (d) 2

41. 22, 37, 52, 67, 84, 97 **[SSC (Multitasking) 2013]**
(a) 52 (b) 84 (c) 97 (d) 67

42. 11, 42, 39, 164, 525, 421, 749
(a) 164 (b) 421 (c) 525 (d) 749

43. 10, 41, 94, 1624, 2516, 3625,4936
(a) 1624 (b) 2516 (c) 3625 (d) 4936

44. 4, 7, 13, 25, 49, 97, 153
(a) 25 (b) 49 (c) 97 (d) 153

45. 1 3 10 36 152 760 4632
(a) 3 (b) 36 (c) 4632 (d) 760
(e) None of these

46. 258, 130, 66, 34, 18, 8, 6
(a) 130 (b) 66 (c) 34 (d) 8

47. 2, 6, 24, 96, 285, 568, 567 **[CLAT 2013]**
(a) 6 (b) 24 (c) 96 (d) 285

48. 4, 5, 14, 39, 103, 169, 290
(a) 5 (b) 14 (c) 39 (d) 103

49. 2, 3, 6, 15, 37.5, 157.5, 630
(a) 3 (b) 6 (c) 15 (d) 37.5

50. 2, 5, 11, 27, 58, 121, 248
(a) 5 (b) 11 (c) 27 (d) 58

51. 1, 2, 6, 21, 86, 445, 2676
(a) 2 (b) 6 (c) 21 (d) 86

52. 644, 328, 164, 84, 44, 24, 14
(a) 328 (b) 164 (c) 84 (d) 44

53. 157.5 45 15 6 3 2 1
(a) 1 (b) 2 (c) 6 (d) 157.5

54. 5531 5506 5425 5304 5135 4910 4621 **[IBPS (PO) 2012]**
(a) 5531 (b) 5425 (c) 4621 (d) 5136
(e) None of these

55. 864, 420, 200, 96, 40, 16, 6
(a) 420 (b) 200 (c) 96 (d) 40

56. 4, 12, 30, 68, 146, 302, 622
(a) 12 (b) 30 (c) 68 (d) 302

57. 3, 6, 9, 22.5, 67.5, 236.25, 945
(a) 6 (b) 9 (c) 22.5 (d) 67.5

58. 6072, 1008, 200, 48, 14, 5, 3
(a) 1008 (b) 200 (c) 48 (d) 14

59. 10, 13, 26, 37, 51, 85, 154
(a) 10 (b) 26 (c) 51 (d) 154

60. 895, 870, 821, 740, 619, 445, 225
(a) 870 (b) 821
(c) 740 (d) 445

61. 4 3 9 34 96 219 435 **[IBPS (PO) 2012]**
(a) 4 (b) 9
(c) 34 (d) 435
(e) None of these

Direction (Q. Nos. 62-63) In each of the following questions, three sequences of letters/numbers are given which corresponds to each other in some way. In each question, you have to find out the letter / number that come in the vacant place markded by question mark (?). These are given as one of the four alternative under the question. Choose the correct answer as instructed.

62. A _ B A C _ D _ B C D C
_ 3 _ 2 _ 1 _ 4 ? ? ? ?
d c _ _ b a c b _ _ _ _
(a) 1, 3, 4, 3 (b) 1, 4, 3, 4 (c) 2, 3, 4, 3 (d) 3, 4, 1, 4

63. B _ _ E _ _ C _ D _ B _ ? ? ? ?
5 _ 7 8 _ 5 6 _ 7 8 _ 6 6 _ _ 5
_ t u _ _ s _ u _ _ _ t _ u v _
(a) CEBD (b) DECB (c) ECBD (d) CDEB

Directions (Q. Nos. 64-94) What comes in place of question mark (?) in the series given below?

64. AZ, BY, CX, ? [SSC (Steno) 2013]
(a) EW (b) EU (c) GH (d) DW

65. AC, FH, K? , PR, UW [SSC (Multitasking) 2014]
(a) L (b) J (c) M (d) N

66. AMN, BOP, CQR, ? [SSC(10+2) 2013]
(a) BAS (b) DST (c) EQP (d) FRS

67. DKY, FJW, HIU, JHS, ? [SSC (10+2) 2013]
(a) LFQ (b) LGQ (c) KGR (d) KFR

68. B E H, K N Q, T W Z, ? [UP PSC 2012]
(a) C F I (b) D G H (c) P R S (d) F I J

69. C, U, R, E, G, T, W, ?
(a) X (b) E (c) F (d) Z

70. Z, U, Q, ?, L [NIFT (UG) 2012]
(a) I (b) K (c) M (d) N

71. AC, FH, KM, PR, ? [SSC (Multitasking) 2014]
(a) UX (b) TV (c) UW (D) VW

72. OAC, PBD, QCE, RDF, ? [MAT 2013]
(a) SGH (b) SHI (c) SEG (d) SIJ

73. AI, BJ, CK, ? [NIFT (UG) 2012]
(a) DC (b) DM (c) DL (d) CM

74. AHL, ?, CFI, DEJ [SSC (Steno) 2013]
(a) BGK (b) BKG (c) GKB (d) GBK

75. BCD, BDC, CBD, ?, DCB [MAT 2013]
(a) CDB (b) CCD (c) CDE (d) DCB

76. CEG, IKM, OQS, ? [SSC (Steno) 2013]
(a) VXZ (b) TVX (c) TUV (d) UWY

77. A, R, C, S, E, T, G, ?, ? [SSC (CPO) 2010]
(a) X, Z (b) U, I (c) W, Y (d) V, B

78. AEI, BFJ, CGK, ? [RRB (TC/CC) 2012]
(a) DHL (b) DLH (c) EIM (d) LPT

79. BDF, HJL, NPR, ? [SSC (CGL) 2010]
(a) OQS (b) TUV (c) TVX (d) UVW

80. ABCD, BCDA, CDAB, ?, ABCD [MAT 2013]
(a) BADC (b) DABC (c) DBAC (d) DACB

81. YVP, WTN, URL, ?
(a) VSP (b) SRJ (c) SPJ (d) TQL

82. AIBJCK?? [SSC (Multitasking) 2013]
(a) EM (b) EL (c) DL (d) DM

83. NZ, OY, PX, QW, RV, ? [SSC (Multitasking) 2013]
(a) FS (b) SU (c) UF (d) TU

84. AMV, BNW, COX, ?, EQZ [MAT 2013]
(a) DMO (b) DPY (c) DYP (d) DLZ

85. XWA, VTC, SPF, OKJ, ?
(a) JDN (b) JEO (c) LPN (d) JDP

86. BEAG, DGCI, FIEK,? [SSC (CGL) 2013]
(a) HMIE (b) HKGM (c) HGKJ (d) HKLJ

87. bc, cde, de, efg, fg, ? [SSC (CGL) 2013]
(a) ghi (b) fgh (c) hij (d) ijk

88. PQRS, QPRS, RPQS, ? [MAT 2012]
(a) SQPR (b) RPQS (c) QSPR (d) SQPR

89. TSMD, TSDM, TMDS, ?
(a) TSDM (b) SDTM (c) TMDS (d) SDMT

90. AFI, JOR, MRU, ? [SSC (CGL) 2013]
(a) GJN (b) HMP
(c) PMO (d) RJL

91. AGMSY, CIOUA, EKQWC, ? , IOUAG, KQWCI
[SSC (10+2) 2010]
(a) GMSYE (b) FMSYE
(c) GNSYD (d) FMYES

92. STARE, ASSET, TASTE, SAUTE, STAVE, WASTE, TAXES, ?
(a) FAEST (b) FEAST
(c) YEAST (d) WESAT

93. ST, ND, RD, TH, ?, ?
(a) TH, TH (b) VW, SW
(c) RW, KH (d) ST, MN

94. URY, NUS, RTH, ARS, TER, URN, NUS, UNE, ?
(a) UTO (b) UFO
(c) NET (d) FSO

Directions (Q. Nos. 95-107) In each of the following questions, continuous pattern series is given. Some of the letters of the series are missing. These missing letters are given in that order as one of the four alternatives below the series. Find out the correct alternatives.

95. ab_cabb_caa_bccab_cab_cc **[LIC (ADO) 2009]**
(a) abbcc (b) baabc (c) bcbbb (d) bcaac
(e) None of these

96. adb_ac_da_cddcb_dbc_cbda **[CMAT 2013]**
(a) bccba (b) cbbaa (c) ccbba (d) bbcad

97. c_bba_cab_ac_ab_ac **[IIFT 2013]**
(a) b, c, b, a, c (b) c, a, b, c, b
(c) a, c, c, b, c (d) a, c, b, c, b

98. b_acbda_bd_cb_a_
(a) baadc (b) dcadc
(c) cbdca (d) cdacb

99. ab _ d bc a _ c _ ab _ d **[NIFT (UG) 2013]**
(a) cadbdc (b) cabbcd
(c) abbcdd (d) caddbc

100. c_abbcc_bb_cab_c_abb
(a) abcca (b) babac (c) cbbca (d) cacbc

101. bc_bca_cab_ab_a_ca **[SSC (10+2) 2013]**
(a) abcab (b) cabac (c) abccb (d) cabca

102. mc_m_a_ca_ca_c_mc **[SSC (10+2) 2013]**
(a) acmmma (b) camcam
(c) aaacmm (d) acmmmc

103. a_a_abab_ba **[SSC (10+2) 2013]**
(a) abab (b) baab (c) abba (d) bbab

104. aa_aaa_aaaa_aaaa_b
(a) baaa (b) bbaa (c) bbbb (d) bbba

105. a_cdaab_cc_daa_bbb_ccddd
(a) bdbda (b) bddca (c) abdcb (d) bbdac

106. ab_bcbca_ _ c _ bab
(a) aabc (b) baaa (c) abcc (d) ccaa

107. _A _ A _ _ B A B _ B _ B A B A **[UP PSC 2013]**
(a) BBABAA (b) BBBAAA (c) ABABBA (d) BBAABB

Directions (Q. Nos. 108-121) What value should come in place of the question mark (?) in the series given below?

108. E-5, G-7, I-9, K-11, M-13, ?
(a) N-14 (b) N-15 (c) O-15 (d) O-17

109. D-23, E-22, F-21, G-20, H-19, ?
(a) I-18 (b) I-9 (c) I-20 (d) I-15

110. 2B, 4C, 8E, 14H, ?
(a) 16 K (b) 20I (c) 20L (d) 22L

111. 2, A, 9, B, 6, C, 13, D, ?
(a) 9 (b) 10 (c) 12 (d) 19

112. 128, 61, Y, 64, 63, S, 32, 65, N, 16, 67, J, 8, 69, G, ?, ?, ?
(a) 2, 70, J (b) 3, 70, E (c) 4, 70, E (d) 4, 71, E

113. N5V, K7T, ?, E14P, B19N
(a) H9R (b) H10Q (c) H10R (d) I10R

114. DE-9, FC-9, LP-28, GT-?
(a) 35 (b) 8
(c) 27 (d) 6

115. CD-12, LB-24, BP-32, NE-?
(a) 70 (b) 75 (c) 45 (d) 95

116. Q1, P2, R6, N24, V120, ?
(a) W600 (b) X720 (c) F720 (d) F600

117. A1Z, E2V, I6R, M21N, Q88J, ? **[CG PSC 2013]**
(a) F 445 U (b) U 445 F (c) G342 C (d) V 441 G
(e) T 267 N

118. Y4X9, W16V25, ?, S64R81 **[MAT 2013]**
(a) U39T49 (b) U36T49 (c) U32 T48 (d) N36 T46

119. W-144, ?, S-100, Q-81, O-64
(a) U-121 (b) U-122 (c) V-121 (d) V-128

120. X24C3, V22E5, T20G7, ? **[MAT 2013]**
(a) R161I 7 (b) R17I 9 (c) R18I 9 (d) R19I 10

121. BD3FH, AC5EG, JL7NP, ? **[MAT 2013]**
(a) IK9MO (b) IK11MO (c) IK13MO (d) IK17MO

Response & Interpretations (Master Exercise)

1. (*d*) Here, series moves with the addition of 6, 12, 24, 48, 96 and 192, respectively. Hence, the missing number is 202.

2. (*d*) The pattern is as follows

$10 \quad 33 \quad 102 \quad 309 \quad \boxed{930}$

$\times3+3 \quad \times3+3 \quad \times3+3 \quad \times3+3$

$\therefore$? = 930

3. (*d*) Here, series is written in descending order with a difference of 9, 8, 7, 6 and 5, respectively. Hence, the missing number will be 104.

4. (*b*) The pattern is as follows

$3 \quad 11 \quad 23 \quad 39 \quad \boxed{59}$

$+8 \quad +12 \quad +16 \quad +20$

$\therefore$? = 59

5. (*a*) The pattern is as follows

$31 \quad 13 \qquad 45 \quad 54 \qquad 36 \quad 63$

Interchange Interchange Interchange

$\therefore$? = 36

6. (*d*) The pattern is as follows

$8 \quad 27 \quad 64 \quad 125$

$(2^3) \quad (3^3) \quad (4^3) \quad (5^3)$

$\therefore$? = 125

7. (*b*) The pattern is as follows

$1 \quad 3 \quad 7 \quad 13 \quad 21 \quad 31 \quad 43 \quad \boxed{57}$

$+2 \quad +4 \quad +6 \quad +8 \quad +10 \quad +12 \quad +14$

$\therefore$? = 57

8. (*c*) The pattern is as follows

$975 \quad 864 \quad 753 \quad 642 \quad \textcircled{531}$

$-111 \quad -111 \quad -111 \quad -111$

$\therefore$? = 531

9. (*d*) Every third element is the sum of its previous two elements.

$3 + 4 = 7$
$4 + 7 = 11$
$7 + 11 = 18$
$11 + 18 = 29$
$18 + 29 = \boxed{47}$

$\therefore$? = 47

10. (*a*) Since, each term is obtained by adding two previous term,

$\therefore$? = 13 + 21 = 34

11. (*c*) The pattern is as follows

$285 \quad 253 \quad 221 \quad 189 \quad \boxed{157}$

$-32 \quad -32 \quad -32 \quad -32$

$\therefore$? = 157

12. (*b*) The pattern is as follows

$7 \quad 8 \quad 11 \quad 16 \quad 23 \quad \boxed{32}$

$+1 \quad +3 \quad +5 \quad +7 \quad +9$

$+2 \quad +2 \quad +2 \quad +2$

$\therefore$? = 32

13. (*b*) The pattern is as follows

$3 \quad 9 \quad 6 \quad 36 \quad 30 \quad \boxed{900}$

$\times3 \quad -3 \quad \times6 \quad -6 \quad \times30$

$\therefore$? = 30

14. (*d*) The pattern is as follows

$26 \quad 37 \quad 50 \quad 65 \quad \textcircled{82} \quad 101$

$+11 \quad +13 \quad +15 \quad +17 \quad +19$

$\therefore$? = 82

15. (*b*) Deduct the middle digit each time to obtain the next number.

$758 - 5 = 753\,; \quad 753 - 5 = 748$
$748 - 4 = 744\,; \quad 744 - 4 = 740$
$740 - 4 = 736\,; \quad 736 - 3 = \boxed{733}$

$\therefore$? = 733

16. (*c*) The pattern is as follows

$6 \quad 42 \quad \textcircled{252} \quad 1260 \quad 5040 \quad 15120 \quad 30240$

$\times7 \quad \times6 \quad \times5 \quad \times4 \quad \times3 \quad \times2$

$\therefore$? = 252

17. (*d*) The pattern is as follows

$17 \quad 43 \quad 81 \quad 131 \quad \textcircled{193}$

$+26 \quad +38 \quad +50 \quad +62$

$+12 \quad +12 \quad +12$

$\therefore$? = 193

18. (*b*) The pattern is as follows

$30 \quad 68 \quad 130 \quad 222 \quad \textcircled{350} \quad 520 \quad 738$

$+38 \quad +62 \quad +92 \quad +128 \quad +170 \quad +218$

$+24 \quad +36 \quad +36 \quad +42 \quad +48$

$+6 \quad +6 \quad +6 \quad +6$

$\therefore$? = 350

19. (*d*) Here, the series is a palindromic sequence where the series looks similar when seen from either end.

20. (*b*) The pattern is as follows

$15 \quad 17 \quad 20 \quad 22 \quad 27 \quad 29 \quad \textcircled{36} \quad \textcircled{38}$

$+2 \quad +3 \quad +2 \quad +5 \quad +2 \quad +7 \quad +2$

$\therefore$ First ? = 36 and second ? = 38

$\therefore$ Required answer = 36, 38

21. (*b*) When the digits of the numbers are reversed these are the perfect squares 09, 16, 25, 36, 49, 64, 81 consecutive

$\therefore$? = Reverse of 64 = 46

22. (*b*) The pattern is as follows

$$8 \xrightarrow[\times 3]{} 24 \xrightarrow[\div 2]{} 12 \xrightarrow[\times 3]{} \textcircled{36} \xrightarrow[\div 2]{} 18 \xrightarrow[\times 3]{} 54$$

$\therefore$? = 36

23. (*d*) Here, the pattern is as follows

Divide by 2, multiple by 3 and the same process is repeated

$48 \div 2 = 24$; $24 \times 3 = 72$

$72 \div 2 = 36$; $36 \times 3 = 108$

$108 \div 2 = 54$

$\therefore$? = 54

24. (*c*) Keep subtracting the next larger perfect cube *i.e.,* 1, 8, 27, 64, 125, 216, 343.

$\therefore$? = 434 − 343 = 91

25. (*b*) The given series is the series of prime numbers.

3,5,7,11,13,17,19,23

$\therefore$? = 11

26. (*b*) The sequence is $7^7, 6^6, 5^5, 4^4, 3^3, 2^2, 1^1$

$\therefore$? = $3^3 = 9$

27. (*d*) The pattern is as follows

$$14 \xrightarrow[\times 1+2]{} 16 \xrightarrow[\times 2+3]{} 35 \xrightarrow[\times 3+4]{} 109 \xrightarrow[\times 4+5]{} 441 \xrightarrow[\times 5+6]{} \textcircled{2211}$$

$\therefore$? = 2211

28. (*c*) The pattern of series is as follows

$$\begin{array}{cccccc} 4 & 18 & \boxed{48} & 100 & 180 & 294 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 2^2\times1 & 3^2\times2 & 4^2\times3 & 5^2\times4 & 6^2\times5 & 7^2\times6 \end{array}$$

$\therefore$? = 48

29. (*d*) The pattern is as follows

$$3 \xrightarrow[\times 7+1]{} 22 \xrightarrow[\times 6+2]{} \textcircled{134} \xrightarrow[\times 5+3]{} 673 \xrightarrow[\times 4+4]{} 2696 \xrightarrow[\times 3+5]{} 8093$$

$\therefore$? = 134

30. (*a*) The pattern of series is as follows

$4 \times 2 + 1 = 9$; $9 \times 2 + 2 = 20$

$20 \times 2 + 3 = 43$; $43 \times 2 + 4 = \boxed{90}$

$\therefore$? = 90

31. (*b*) The pattern is as follows

$$5 \xrightarrow[+(1\times6)]{} 11 \xrightarrow[+(2\times6)]{} 23 \xrightarrow[+(4\times6)]{} 47 \xrightarrow[+(8\times6)]{} 95 \xrightarrow[+(16\times6)]{} \boxed{191}$$

$\therefore$? = 191

32. (*d*) The pattern is as follows

$$1 \xrightarrow[\times2+1]{} 3 \xrightarrow[\times2+1]{} 7 \xrightarrow[\times2+1]{} 15 \xrightarrow[\times2+1]{} 31 \xrightarrow[\times2+1]{} \boxed{63}$$

$\therefore$? = 63

33. (*a*) The pattern is as follows

$7 + 1^2 = 8$, $8 + 4^2 = 24$

$24 + 9^2 = 105$, $105 + 16^2 = 361$

$361 + 25^2 = 986$

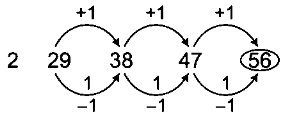
$\therefore$? = 986

34. (*c*) The pattern is as follows

2, 3, 4, 9   3, 4, 5, 12   4, 5, 6, 15   5, 6, 7, 18

2+3+4 = 9   3+4+5 = 12   4+5+6 = 15   5+6+7 = 18

35. (*b*) The pattern is as follows



So, the correct alternative is 56.

36. (*a*) There are three alternative series 2, 3, 4, ... (consecutive numbers), 9, 8, 7 ... (consecutive number in descending order) and 23, 25, 27, ... Hence, 7 will come in place of the missing number.

37. (*d*) The pattern is as follows

$13 \times 13 = 169 \Rightarrow 169 - 1 = 168$

$14 \times 13 = 182 \Rightarrow 182 - 1 = 181$

$15 \times 13 = 195$

$\therefore$ $195 - 1 = 194$

38. (*b*) The pattern is as follows

$1^2 + 1^2 = 1 + 1 = 2$; $2^2 + 2^2 = 4 + 4 = 8$

$3^2 + 3^2 = 9 + 9 = 18$; $4^2 + 4^2 = 16 + 16 = 32$

$5^2 + 5^2 = 25 + 25 = 50$;

$6^2 + 6^2 = 36 + 36 = 72$

$\therefore$? = $\boxed{72}$

39. (*b*) The pattern is as follows

$$6 \xrightarrow[+1]{} 7 \xrightarrow[+2]{} 9 \xrightarrow[+4]{} 13 \xrightarrow[+8]{} \overset{\boxed{21}}{26} \xrightarrow[+16]{} 37 \xrightarrow[+32]{} 69$$

Hence, 21 should come in place of 26 in the series.

40. (*b*) Series moves from the right end with addition of 0, 3, 8, 15, 24 and 35 *i.e.,* with a difference of numbers, which are one less than the square of successive natural numbers. Therefore, number 54 should be replaced by 52.

41. (*b*) The pattern is as follows

$$22 \xrightarrow[+15]{} 37 \xrightarrow[+15]{} 52 \xrightarrow[+15]{} 67 \xrightarrow[+15]{} \overset{\boxed{82}}{84} \xrightarrow[+15]{} 97$$

So, 84 is the incorrect term, it should be 82.

42. (*b*) In rest of the numbers, one digit is the square of the rest part of the number.

43. (*a*) The pattern is as follows

$10 \to (1)^2\ (0)^2$, $41 \to (2)^2\ (1)^2$, $94 \to (3)^2\ (2)^2$,

$2516 \to (5)^2\ (4)^2$, $3625 \to (6)^2\ (5)^2$, $4936 \to (7)^2\ (6)^2$

but in 1624 it is not so.

44. (*d*) The pattern is as follows

$$4 \xrightarrow[+3]{} 7 \xrightarrow[+6]{} 13 \xrightarrow[+12]{} 25 \xrightarrow[+24]{} 49 \xrightarrow[+48]{} 97 \xrightarrow[+96]{} \overset{\boxed{193}}{153}$$

So, 153 is the wrong term in the series

45. (*d*) The pattern is as follows

$$1 \xrightarrow{\times 1+2} 3 \xrightarrow{\times 2+4} 10 \xrightarrow{\times 3+6} 36 \xrightarrow{\times 4+8} 152 \xrightarrow{\times 5+10} \overset{\boxed{770}}{760} \xrightarrow{\times 6+12} 4632$$

From above, we can say that 760 is wrong in the given series. 770 should come in place of 760.

46. (*d*) The pattern is as follows

$$258 \xrightarrow{\div 2+1} 130 \xrightarrow{\div 2+1} 66 \xrightarrow{\div 2+1} 34 \xrightarrow{\div 2+1} 18 \xrightarrow{\div 2+1} \overset{10}{\boxed{8}} \xrightarrow{\div 2+1} 6$$

Hence, number 8 is wrong and should be replaced by 10.

47. (*b*) The pattern is as follows

$$2 \xrightarrow{\times 6-6} 6 \xrightarrow{\times 5-5} \overset{25}{\boxed{24}} \xrightarrow{\times 4-4} 96 \xrightarrow{\times 3-3} 285 \xrightarrow{\times 2-2} 568 \xrightarrow{\times 1-1} 567$$

Hence, number 24 is wrong and should be replaced by 25.

48. (*d*) The pattern is as follows

$$4 \xrightarrow{+(1)^2} 5 \xrightarrow{+(3)^2} 14 \xrightarrow{+(5)^2} 39 \xrightarrow{+(7)^2} \overset{88}{\boxed{103}} \xrightarrow{+(9)^2} 169 \xrightarrow{+(11)^2} 290$$

Hence, number 103 is wrong and should be replaced by 88.

49. (*d*) The pattern is as follows

$$2 \xrightarrow{\times 1.5} 3 \xrightarrow{\times 2} 6 \xrightarrow{\times 2.5} 15 \xrightarrow{\times 3} \overset{45}{\boxed{37{\cdot}5}} \xrightarrow{\times 3.5} 157.5 \xrightarrow{\times 4} 630$$

Hence, number 37.5 is wrong and should be replaced by 45.

50. (*b*) The pattern is as follows

$$2 \xrightarrow{\times 2+1} 5 \xrightarrow{\times 2+2} \overset{12}{\boxed{11}} \xrightarrow{\times 2+3} 27 \xrightarrow{\times 2+4} 58 \xrightarrow{\times 2+5} 121 \xrightarrow{\times 2+6} 248$$

Hence, number 11 is wrong and should be replaced by 12.

51. (*d*) The pattern is as follows

$$1 \xrightarrow{\times 1+1} 2 \xrightarrow{\times 2+2} 6 \xrightarrow{\times 3+3} 21 \xrightarrow{\times 4+4} \overset{88}{\boxed{86}} \xrightarrow{\times 5+5} 445 \xrightarrow{\times 6+6} 2676$$

Hence, number 86 is wrong and should be replaced by 88.

52. (*a*) The pattern is as follows

$$644 \xrightarrow{\div 2+2} \overset{324}{\boxed{328}} \xrightarrow{\div 2+2} 164 \xrightarrow{\div 2+2} 84 \xrightarrow{\div 2+2} 44 \xrightarrow{\div 2+2} 24 \xrightarrow{\div 2+2} 14$$

Hence, number 328 is wrong and should be replaced by 324.

53. (*a*) The pattern is as follows

$$157.5 \xrightarrow{\div 3.5} 45 \xrightarrow{\div 3} 15 \xrightarrow{\div 2.5} 6 \xrightarrow{\div 2} 3 \xrightarrow{\div 1.5} 2 \xrightarrow{\div 1} \overset{\boxed{2}}{1}$$

From above, 2 should come in place of 1 in given series.

54. (*a*) The pattern is as follows

$$\boxed{5555}\ 5531 \xrightarrow[\boxed{-7^2}]{-5^2} 5506 \xrightarrow{-9^2} 5425 \xrightarrow{-11^2} 5304 \xrightarrow{-13^2} 5135 \xrightarrow{-15^2} 4910 \xrightarrow{-17^2} 4621$$

From above, we can say that 5531 is wrong in the series. 5555 should come in place of 5531.

55. (*c*) Pattern of the series from the right end follows the rule

$6 \times 2 + 4 = 16, \quad 16 \times 2 + 8 = 40, \quad 40 \times 2 + 12 = 92,$
$92 \times 2 + 16 = 200$ ... and so on.

Therefore, number 96 should be replaced by 92.

56. (*d*) The series is written using the pattern

$4 \times 2 + 4 = 12, 12 \times 2 + 6 = 30,$
$30 \times 2 + 8 = 68, 68 \times 2 + 10 = 146,$
$146 \times 2 + 12 = 304, 304 \times 2 + 14 = 622.$

Therefore, number 302 should be replaced by 304.

57. (*a*) Pattern of the series is

$3 \times 1.5 = 4.5, 4.5 \times 2 = 9, 9 \times 2.5 = 22.5,$
$22.5 \times 3 = 67.5, 67.5 \times 3.5 = 236.25$

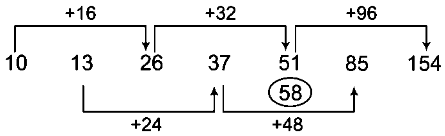
Therefore, number 6 should be replaced by 4.5.

58. (*a*) The pattern is as follows

$$6072 \xrightarrow{\div 6-2} \overset{1010}{\boxed{1008}} \xrightarrow{\div 5-2} 200 \xrightarrow{\div 4-2} 48 \xrightarrow{\div 3-2} 14 \xrightarrow{\div 2-2} 5 \xrightarrow{\div 1-2} 3$$

Hence, number 1008 is wrong and should be replaced by 1010.

59. (*c*) The pattern is as follows



Hence, number 51 is wrong and should be replaced by 58.

60. (*d*) The pattern is as follows

$$895 \xrightarrow{-(5)^2} 870 \xrightarrow{-(7)^2} 821 \xrightarrow{-(9)^2} 740 \xrightarrow{-(11)^2} 619 \xrightarrow{-(13)^2} \overset{450}{\boxed{445}} \xrightarrow{-(15)^2} 225$$

Hence, number 445 is wrong and should be replaced by 450.

61. (*d*) The pattern is as follows

$$4 \xrightarrow{+1^3-2} 3 \xrightarrow{+2^3-2} 9 \xrightarrow{+3^3-2} 34 \xrightarrow{+4^3-2} 96 \xrightarrow{+5^3-2} 219 \xrightarrow{+6^3-2} \overset{\boxed{433}}{435}$$

From above, we can say that 435 is wrong in the given series. 433 should come in place of 435.

62. (*b*) By analysing and comparing the positions of the elements of all the three sequences given in the question, we get

A = d = 2, B = a = 1, C = b = 4, D = c = 3

So, BCDC corresponds to 1434.

∴ Required answer = 1, 4, 3, 4

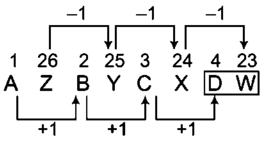
63. (*d*) By analysing and comparing the positions of the elements of all the three sequences given in the question, we get

B = s = 5, C = t = 6,
D = u = 7, E = v = 8

So, the sequences will be as follows

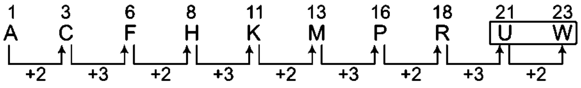
∴ Required answer = CDEB

64. (*d*) The pattern is as follows


–1
–1
–1
1 26 2 25 3 24 4 23
A Z B Y C X D W
+1
+1
+1

∴ ? = DW

65. (*c*) The pattern is as follows


1 3 6 8 11 13 16 18 21 23
A C F H K M P R U W
+2 +3 +2 +3 +2 +3 +2 +3 +2

∴ ? = M

66. (*b*) The pattern is as follows

$$\overset{1}{A} \xrightarrow{+1} \overset{2}{B} \xrightarrow{+1} \overset{3}{C} \xrightarrow{+1} \overset{4}{D}$$
$$\overset{13}{M} \xrightarrow{+2} \overset{15}{O} \xrightarrow{+2} \overset{17}{Q} \xrightarrow{+2} \overset{19}{S}$$
$$\overset{14}{N} \xrightarrow{+2} \overset{16}{P} \xrightarrow{+2} \overset{18}{R} \xrightarrow{+2} \overset{20}{T}$$

∴ ? = DST

67. (*b*) The pattern is as follows

$$\overset{4}{D} \xrightarrow{+2} \overset{6}{F} \xrightarrow{+2} \overset{8}{H} \xrightarrow{+2} \overset{10}{J} \xrightarrow{+2} \boxed{\overset{12}{L}}$$
$$\overset{11}{K} \xrightarrow{-1} \overset{10}{J} \xrightarrow{-1} \overset{9}{I} \xrightarrow{-1} \overset{8}{H} \xrightarrow{-1} \boxed{\overset{7}{G}}$$
$$\overset{25}{Y} \xrightarrow{-2} \overset{23}{W} \xrightarrow{-2} \overset{21}{U} \xrightarrow{-2} \overset{19}{S} \xrightarrow{-2} \boxed{\overset{17}{Q}}$$

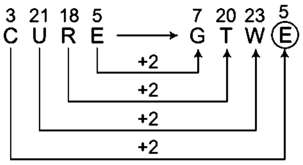
∴ ? = LGQ

68. (*a*) The pattern is as follows

B(cd) E(fg) H(ij) K(lm) N(op) Q(rs) T(uv) W(xy) Z(ab) C(de) F(gh)I

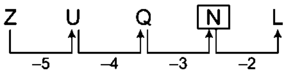
∴ ? = CFI

69. (*b*)


3 21 18 5
C U R E
7 20 23 5
G T W E
+2
+2
+2
+2

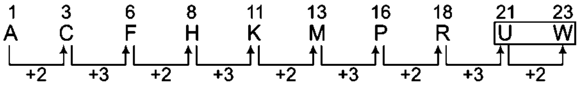
∴ ? = E

70. (*d*) The pattern is as follows



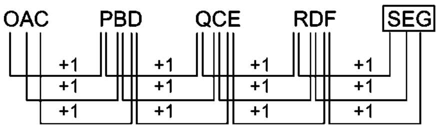
∴ ? = N

71. (*c*) The pattern is as follows


1 3 6 8 11 13 16 18 21 23
A C F H K M P R U W
+2 +3 +2 +3 +2 +3 +2 +3 +2

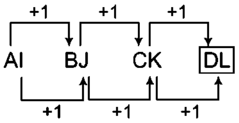
∴ ? = UW

72. (*c*) The pattern is as follows


OAC PBD QCE RDF SEG
+1 +1 +1 +1
+1 +1 +1 +1
+1 +1 +1 +1

∴ ? = SEG

73. (*c*) The pattern is as follows


+1 +1 +1
AI BJ CK DL
+1 +1 +1

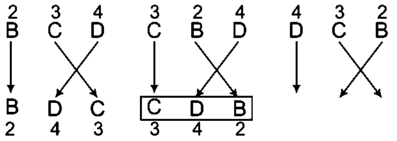
∴ ? = DL

74. (*a*) The pattern is as follows

$$\overset{1}{A} \xrightarrow{+1} \overset{2}{B} \xrightarrow{+1} \overset{3}{C} \xrightarrow{+1} \overset{4}{D}$$
$$\overset{8}{H} \xrightarrow{-1} \overset{7}{G} \xrightarrow{-1} \overset{6}{F} \xrightarrow{-1} \overset{5}{E}$$
$$\overset{12}{L} \xrightarrow{-1} \overset{11}{K} \xrightarrow{-2} \overset{9}{I} \xrightarrow{+1} \overset{10}{J}$$

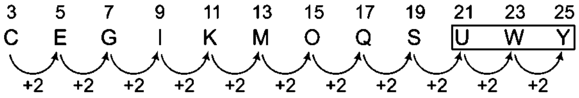
∴ ? = BGK

75. (*d*) The pattern is as follows


2 3 4
B C D
3 2 4
C B D
4 3 2
D C B
B D C
2 4 3
C D B
3 4 2

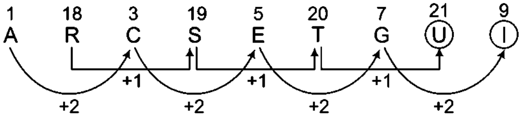
∴ ? = CDB

76. (*d*) The pattern is as follows


3 5 7 9 11 13 15 17 19 21 23 25
C E G I K M O Q S U W Y
+2 +2 +2 +2 +2 +2 +2 +2 +2 +2 +2

∴ ? = UWY

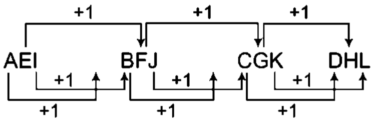
77. (*b*) The pattern is as follows


1 18 3 19 5 20 7 21 9
A R C S E T G U I
+1 +1 +1
+2 +2 +2 +2

∴ First ? = U, Second ? = I

∴ Required answer = U, I

78. (*a*) The pattern is as follows


+1 +1 +1
AEI BFJ CGK DHL
+1 +1 +1
+1 +1 +1

∴ ? = DHL

79. (*c*) The pattern is as follows

1st Letter : $\overset{2}{B} \xrightarrow{+6} \overset{8}{H} \xrightarrow{+6} \overset{14}{N} \xrightarrow{+6} \boxed{\overset{20}{T}}$

2nd Letter : $\overset{4}{D} \xrightarrow{+6} \overset{10}{J} \xrightarrow{+6} \overset{16}{P} \xrightarrow{+6} \boxed{\overset{22}{V}}$

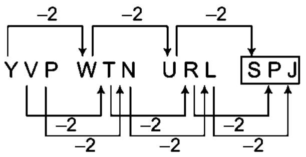
3rd Letter : $\overset{6}{F} \xrightarrow{+6} \overset{12}{L} \xrightarrow{+6} \overset{18}{R} \xrightarrow{+6} \boxed{\overset{24}{X}}$

∴ ? = TVX

80. (*b*) In the following series, the next term is obtained by shifting the first letter of the previous term to the last place.

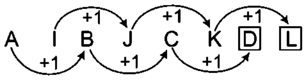
∴ ? = DABC

81. (*c*) The pattern is as follows


−2 −2 −2
Y V P W T N U R L S P J
−2 −2 −2
−2 −2 −2

∴ ? = SPJ

82. (*c*) The pattern is as follows

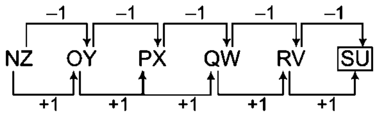

+1 +1 +1
A I B J C K D L
+1 +1 +1

∴ First ? = D

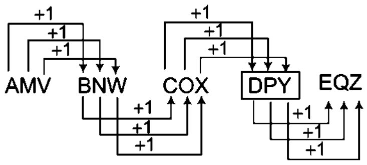
Second ? = L

∴ Required answer = D,L

83. (*b*) Here, the pattern is as follows

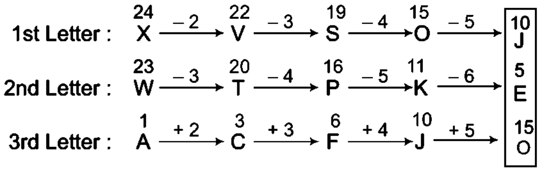

−1 −1 −1 −1 −1
NZ OY PX QW RV SU
+1 +1 +1 +1 +1

84. (*b*) The pattern is as follows


+1 +1 +1
+1 +1 +1
AMV BNW COX DPY EQZ
+1 +1 +1
+1 +1 +1

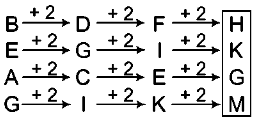
∴ ? = DPY

85. (*b*) The pattern is as follows


1st Letter : 24 X −2 22 V −3 19 S −4 15 O −5 10 J
2nd Letter : 23 W −3 20 T −4 16 P −5 11 K −6 5 E
3rd Letter : 1 A +2 3 C +3 6 F +4 10 J +5 15 O

∴ ? = JEO

86. (*b*) The pattern is as follows


B +2 D +2 F +2 H
E +2 G +2 I +2 K
A +2 C +2 E +2 G
G +2 I +2 K +2 M

∴ ? = HKGM

87. (*a*) There are two interwoven series here.

bc, de, fg, (Each next term is formed by next two letters)

cde, efg, ghi (last letter of the previous term starts the new term and next two letters are included in the same term).

∴ ? = ghi

88. (*a*) From element first to second first two letters get reversed, from second to third, first three letters get reversed and from third to last, all the four letters get reversed.

∴ Required answer = SQPR

89. (*d*) From element first to second last two letters are written in reverse order, from element second to third, last three letters are written in reverse order and from element third to fourth, all the four letters are written in reverse order.

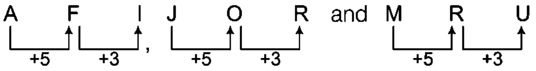
∴ Required answer = SDMT

90. (*b*) The pattern followed in each term is

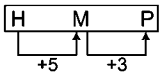
First letter + 5 = Second letter

and second letter + 3 = Third letter

As,

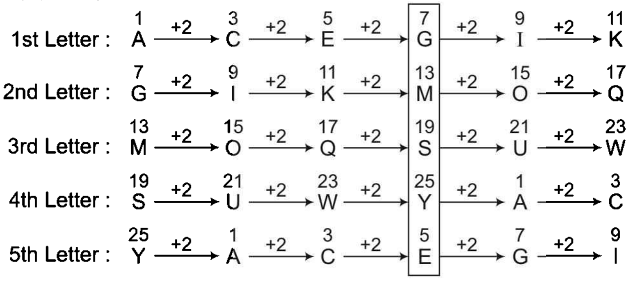

A F I , J O R and M R U
+5 +3 +5 +3 +5 +3

Similarly,



∴ ? = HMP

91. (*a*) The pattern is as follows


1st Letter : 1 A +2 3 C +2 5 E +2 7 G +2 9 I +2 11 K
2nd Letter : 7 G +2 9 I +2 11 K +2 13 M +2 15 O +2 17 Q
3rd Letter : 13 M +2 15 O +2 17 Q +2 19 S +2 21 U +2 23 W
4th Letter : 19 S +2 21 U +2 23 W +2 25 Y +2 1 A +2 3 C
5th Letter : 25 Y +2 1 A +2 3 C +2 5 E +2 7 G +2 9 I

∴ ? = GMSYE

92. (*c*) These are all anagrams of SEAT with one extra letter added. The letters added, in order are R, S, T, U, V, W, X, Y.

93. (*a*) This sequence consists of the last pair of letters in the words FIRST, SECOND, THIRD, FOURTH, FIFTH, SIXTH.

94. (*a*) These are the last three letters of the names of the planats in our solar system.

MERCURY, VENUS, EARTH, MARS, JUPITER, SATURN, URANUS, NEPTUNE, PLUTO

95. (*c*) Series pattern : abbcabbcc / aabbcc/abbcabbcc

∴ Required answer = bcbbb

96. (*b*) In the above series, the letters are equidistant from the beginning and the end.

adbcacbdabcddcbadbcacbda

Hence, the missing letter are cbbaa.

97. (*d*) Series pattern : cab/bac/cab/bac/cab/bac

∴ Required answer = acbcb

98. (*b*) Series pattern : bdac/bdac/bdac/bdac

∴ Required answer = dcadc

99. (*a*) Here, in the series letters 'abcd' are repeated

abcd/a bcd/abcd/abcd

So, the missing letters are cadbdc.

100. (*d*) Series pattern : ccabb/ccabb/ccabb/ccabb

∴ Required answer = cacbc

101. (*c*) Series pattern : bc/abc/abc/abc/abc/abca

∴ Required = abccb

102. (*a*) Series pattern : mca /mca/mca/mca/mca/mc

∴ Required answer = acmmma

103. (*d*) Here, in the series letters 'ab' are repeated.

a$\underline{b}$/a$\underline{b}$/ab/ab/$\underline{a}$b/a$\underline{b}$ = bbab

∴ ? = bbab

104. (*d*) Series pattern : aa$\underline{b}$/aaa$\underline{b}$/aaaa$\underline{b}$/aaaa$\underline{a}$b

Clearly, the number of 'a' is increasing by one in the successive sequence.

∴ Required answer = bbba

105. (*d*) Series pattern a $\underline{b}$cd/aab $\underline{b}$cc $\underline{d}$d/aa $\underline{a}$bbb $\underline{c}$ccddd

Clearly, each letter of first sequence is repeated two times in the second sequence and three times in the third sequence.

∴ Required answer = bbdac

106. (*d*) Series pattern : ab $\underline{c}$bc/bca $\underline{c}$ $\underline{a}$/c $\underline{a}$bab

Clearly, the series consists of three sequences, the first sequence begins with a, the second with b and the third with c. Each sequence consists of a letter followed by the pair of other two letters repeated twice.

∴ Required answer = ccaa

107. (*b*) Here in the series word 'BABA' is repeated

$\underline{B}$ A $\underline{B}$ A $\underline{B}$ $\underline{A}$ B A B $\underline{A}$ B $\underline{A}$ B A B A

So, the missing letters are BBBAAA

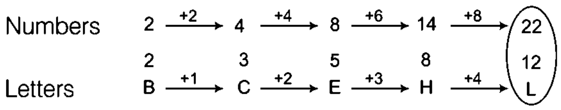
108. (*c*) The letters in the given series are alternate and the numbers indicate their position in the English alphabetical series from the beginning.

∴ ? = O-15

109. (*a*) The letters in the given series are in continuous sequence of forward order English alphabet with each letter showing its backward order position in the alphabet.

∴ ? = I – 18

110. (*d*) The pattern is as follows



Numbers
2 +2 4 +4 8 +6 14 +8 22
Letters
2 3 5 8 12
B +1 C +2 E +3 H +4 L

∴ ? = 22 L

111. (*b*) The given sequence has two parts.

Part I 2, 9, 6, 13

Part II A, B, C, D

Series pattern of part I is as follows

$$2 \xrightarrow{+7} 9 \xrightarrow{-3} 6 \xrightarrow{+7} 13 \xrightarrow{-3} ⑩$$

∴ ? = 10

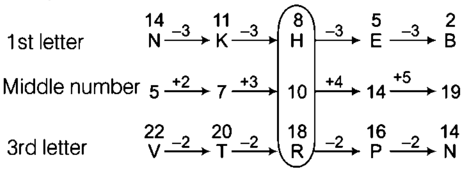
112. (*d*) There are three interwoven sequences here.

128, 64, 32, 16, 8, 4 (dividing each time by 2)

61, 63, 65, 67, 69, 71 (adding 2 each time)

Y, S, N, J, G, E (move 6 letters backward then 5, then 4, 3, 2)

113. (*c*) The pattern is as follows



1st letter
14 N −3 11 K −3 8 H −3 5 E −3 2 B
Middle number
5 +2 7 +3 10 +4 14 +5 19
3rd letter
22 V −2 20 T −2 18 R −2 16 P −2 14 N

∴ ? = H10R

114. (*c*) Letter positions are added.

4 + 5 = 9 6 + 3 = 9
D E F C
12 + 16 = 28 7 + 20 = 27
L P G T

∴ ? = 27

115. (*a*) Letter positions are multiplied.

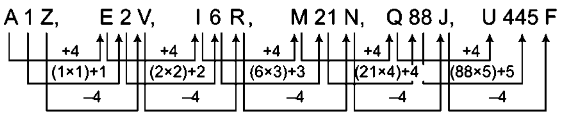
3 × 4 = 12 12 × 2 = 24
C D L B
2 × 16 = 32 14 × 5 = 70
B P N E

∴ ? = 70

116. (*c*) The letters move back and forth by powers of 2 starting from $2^0, 2^1$ and so on. *i.e.*, −1, +2, −4, +8, −16

The numbers multiply each time by a number one higher *i.e.*, × 2, × 3, × 4, × 5, × 6.

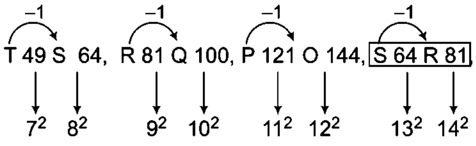
117. (*b*) The pattern is as follows



A 1 Z, E 2 V, I 6 R, M 21 N, Q 88 J, U 445 F
+4 +4 +4 +4 +4
(1×1)+1 (2×2)+2 (6×3)+3 (21×4)+4 (88×5)+5
−4 −4 −4 −4 −4

∴ ? = U445F

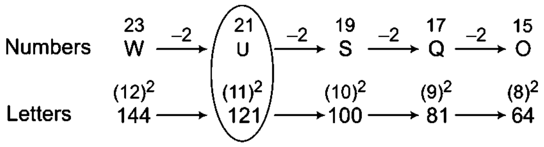
118. (*b*) The pattern is as follows



−1 −1 −1 −1
T 49 S 64, R 81 Q 100, P 121 O 144, S 64 R 81
7² 8² 9² 10² 11² 12² 13² 14²

∴ ? = U36T49

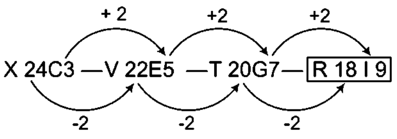
119. (*a*) The pattern is as follows



Numbers
23 W −2 21 U −2 19 S −2 17 Q −2 15 O
Letters
(12)² 144 (11)² 121 (10)² 100 (9)² 81 (8)² 64

∴ ? = U-121

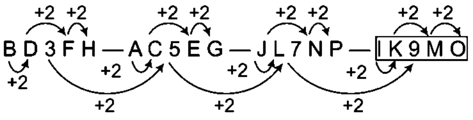
120. (*c*) The pattern is as follows



+2 +2 +2
X 24C3 — V 22E5 — T 20G7 — R 18 I 9
−2 −2 −2

∴ ? = R18I9

121. (*a*) The pattern is as follows



+2 +2 +2 +2 +2 +2 +2 +2
B D 3 F H — A C 5 E G — J L 7 N P — I K 9 M O
+2 +2 +2 +2
+2 +2 +2

∴ ? = IK9MO

6

Logical Arrangement of Words

Logical Arrangement is the meaningful arrangement of words in accordance with the natural laws and universally accepted concepts.

Different types of questions are covered in this chapter are as follows

- Sequence of Occurrence of Events or Various Stages in a Process
- Sequence of Objects in a Class or Group
- Sequence in Ascending or Descending Order
- Sequential Order of Words According to Dictionary

In this type of problems, a sequence is to be formed with the given number of words in such a way that the particular arrangement of the words gives a logical step by step completion of some process or activity. In these questions, four/five/six words are given which are related to each other in some or other way. The candidate is required to find out the proper logical arrangement of these words from the given alternatives.

Several types of problems based on logical arrangement of words asked in various competitive exams are categorised as follows

Type 1 Sequence of Occurrence of Events or Various Stages in a Process

The given words may be such that they are related to a particular event or represent the various stages of a certain chained process from beginning to end. A candidate is required to choose that option from the given alternatives, which represents the correct logical sequence of the process.

The examples given below will give you a better idea about such words

***Ex* 1** Arrange the following words in a meaningful order

1. Reading 2. Composing 3. Writing 4. Printing

(a) 1, 3, 4, 2 (b) 2, 3, 4, 1 (c) 3, 1, 2, 4 (d) 3, 2, 4, 1

Sol. (*d*) The given words represent the various stages in the process of publishing.

Firstly, the matter is written, followed by composition of that written matter. Then, this composed matter is printed followed by reading. So, the correct order is $3 \rightarrow 2 \rightarrow 4 \rightarrow 1$.

Ex **2** Arrange the following words in a logical sequence.

1. Application 2. Selection 3. Exam 4. Interview 5. Advertisement

(a) 1, 2, 3, 5, 4 (b) 5, 1, 3, 4, 2 (c) 5, 3, 1, 4, 2 (d) 4, 5, 1, 2, 3

Sol. (*b*) For a job,

Advertisement is the 1st stage — 5
Application is the 2nd stage — 1
Selection is the final stage — 2
Interview is the 4th stage — 4
Exam is the 3rd stage — 3
∴ Correct sequence = 5, 1, 3, 4, 2

Type 2 Sequence of Objects in a Class or Group (From Part to Whole)

Sometimes words may be given such that they are related to a particular class or a group. A candidate is required to choose that option from the given alternatives which shows the correct logical sequence of the objects in a particular class or group.

The examples given below will give you a better idea about such words

Ex **3** Arrange the following words in a meaningful order.

1. Family 2. Community 3. Member 4. Locality 5. Country

(a) 3, 1, 2, 4, 5 (b) 3, 1, 2, 5, 4 (c) 3, 1, 4, 2, 5 (d) 3, 1, 4, 5, 2

Sol. (*a*) The arrangement takes place according to the following logic:

The smallest unit amongest the five is member — 3
A member is a part of family — 1
A family is a part of a community — 2
Community is a part of a locality — 4
Locality lies within a country — 5
∴ Correct arrangement = 3, 1, 2, 4, 5

Ex **4** Arrange the following words in a meaningful order.

1. Andhra Pradesh 2. Universe 3. Tirupati 4. World 5. India **[SSC (FCI) 2012]**

(a) 3,1,4,5,2 (b) 1,3,5,42 (c) 3,1,5,4,2 (d) 3,1,2,4,5

Sol. (c) Tirupati is a city situated in the Andhra Pradesh state of India. India is a part of the world and world in turn, is a part of the universe.

So, the correct sequence of part to whole is given as

Tirupati ⟶ Andhra Pradesh ⟶ India ⟶ World ⟶ Universe

and the correct option showing this sequence is (c) *i.e.*, 3 ⟶ 1 ⟶ 5 ⟶ 4 ⟶ 2.

Type 3 Sequence in Ascending or Descending Order

The items or objects represented by the given words may be related to each other in terms of their properties. A candidate is required to arrange the given words on the basis of increasing/decreasing order of their size, age, need, value, intensity etc.

The examples given below will give you a better idea about such words

Ex **5** Arrange the following words in a logical sequence.

1. Gold 2. Iron 3. Sand 4. Platinum 5. Diamond

(a) 2, 4, 3, 5, 1 (b) 3, 2, 1, 5, 4 (c) 4, 5, 1, 3, 2 (d) 5, 4, 3, 2, 1

Sol. (*b*) All the given words represent substances which can be arranged in the increasing order of their cost.

The least costly is sand after which comes the cost of iron, followed by gold, diamond and the costliest among all is platinum. So, they can be arranged in a logical order as 3 → 2 → 1 → 5 → 4.

Ex **6** Arrange the following words in a logical sequence.

1. Trillion 2. Thousand 3. Billion 4. Hundred 5. Million **[SSC (Multitasking) 2009]**

(a) 1, 2, 4, 3, 5 (b) 1, 5, 3, 2, 4 (c) 4, 2, 3, 5, 1 (d) 4, 2, 5, 3, 1

Sol. (*d*) All the words represent the counting numbers and their increasing order is given as below

Hundred ⟶ Thousand ⟶ Million ⟶ Billion ⟶ Trillion

This order is given in option (d) *i.e.*, 4, 2, 5, 3, 1.

Ex **7** Arrange the following words in a logical sequence.

1. Country 2. Furniture 3. Forest 4. Wood 5. Trees **[SSC (Multitasking) 2009]**

(a) 1, 3, 5, 4, 2 (b) 1, 4, 3, 2, 5 (c) 2, 4, 3, 1, 5 (d) 5, 2, 3, 1, 4

Sol. (*a*) From the above words, it is deduced that a country contains forests, a forest has trees, trees give wood that is used to make furniture. Hence, the correct sequence is (a).

Type 4 Sequential Order of Words According to Dictionary

In such type of questions, the candidate is required to choose that option from the given alternatives, which is having the correct sequential order of words according to the English dictionary. To check the order of words in English dictionary, first of all check the first letter of each word to find which among these comes first in English alphabet followed by second letter and so on. The word whose letter comes first in English alphabet comes first, the word whose letter comes second in English alphabet comes second and so on.

Ex **8** Arrange the following words according to English dictionary.

1. Hepatitis 2. Cholera 3. Peptidoglycan 4. Chitin

(a) 2, 3, 1, 4 (b) 4, 2, 1, 3 (c) 4, 1, 3, 2 (d) 3, 1, 4, 2

Sol. (*b*) According to English dictionary, Chitin comes first, followed by Cholera which in turn is followed by Hepatitis and the last will be Peptidoglycan. So, the correct sequential order of words is 4 → 2 → 1 → 3 *i.e.*, Chitin → Cholera → Hepatitis → Peptidoglycan

Ex **9** Arrange the following words according to English dictionary.

1. Episode 2. Epistle 3. Episcope 4. Epigraph **[SSC (Multitasking) 2013]**

(a) 1,2,3,4 (b) 4,2,1,3 (c) 3,2,1, 4 (d) 4,3,1,2

Sol. (*d*) As per the English dictionary, the correct sequential order of words is

Epigraph ⟶ Episcope ⟶ Episode ⟶ Epistle *i.e.*, 4 ⟶ 3 ⟶ 1 ⟶ 2.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-40) In each of the following questions, arrange the given words in meaningful sequence and choose the correct sequence from the given alternatives.

1. 1. Lungs 2. Nostrils
3. Windpipe 4. Blood **[SSC (Steno) 2011]**
(a) 1, 2, 3, 4 (b) 2, 3, 1, 4 (c) 1, 3, 4, 2 (d) 4, 3, 2, 1

2. 1. Pupa 2. Larva
3. Moth 4. Eggs **[SSC (CGL) 2013]**
(a) 4, 2, 1, 3 (b) 4, 1, 2, 3
(c) 4, 3, 2, 1 (d) 4, 3, 1, 2

3. 1. Phrase 2. Letter
3. Word 4. Sentence
(a) 1, 2, 3, 4 (b) 1, 3, 2, 4,
(c) 2, 3, 1, 4 (d) 2, 3, 4, 1

4. 1. Honey 2. Flower
3. Bee 4. Wax **[SSC (DEO) 2011]**
(a) 1, 3, 4, 2 (b) 2, 1, 4, 2,
(c) 2, 3, 1, 4 (d) 4, 3, 2, 1

5. 1. District 2. Village
3. State 4. Block **[SSC (10+2) 2012]**
(a) 2, 1, 4, 3 (b) 2, 3, 4, 1
(c) 2, 4, 1, 3 (d) 3, 2, 1, 4

6. 1. Tired 2. Night
3. Day 4. Sleep
5. Work **[SSC (CPO) 2010]**
(a) 1, 3, 5, 2, 4 (b) 3, 5, 1, 4, 2
(c) 3, 5, 1, 2, 4 (d) 3, 5, 2, 1, 4

7. 1. Poverty 2. Population
3. Death 4. Unemployment
5. Disease
(a) 3, 4, 2, 5, 1 (b) 2, 4, 1, 5, 3
(c) 2, 3, 4, 5, 1 (d) 1, 2, 3, 4, 5

8. 1. Table 2. Tree
3. Wood 4. Seed
5. Plant
(a) 4, 5, 3, 2, 1
(b) 4, 5, 2, 3, 1
(c) 1, 3, 2, 4, 5
(d) 1, 2, 3, 4, 5

9. 1. Index 2. Contents
3. Title 4. Chapters
5. Introduction
(a) 3, 2, 5, 1, 4 (b) 2, 3, 4, 5, 1
(c) 5, 1, 4, 2, 3 (d) 3, 2, 5, 4, 1

10. 1. House 2. Street
3. Room 4. Town
5. District **[SSC (Steno) 2011]**
(a) 3, 2, 1, 4, 5 (b) 3, 1, 4, 2, 5
(c) 3, 1, 2, 4, 5 (d) 3, 1, 2, 5, 4

11. 1. Vegetable 2. Market
3. Cutting 4. Cooking
5. Food **[SSC (LDC) 2011]**
(a) 1, 2, 3, 4, 5 (b) 2, 1, 3, 4, 5
(c) 3, 1, 2, 5, 4 (d) 5, 2, 1, 3, 4

12. 1. Cut 2. Put on
3. Mark 4. Measure
5. Sew
(a) 4, 3, 1, 5, 2 (b) 3, 1, 5, 4, 2
(c) 2, 4, 3, 1, 5 (d) 1, 3, 2, 4, 5

13. 1. Euphoria 2. Happiness
3. Ambivalence 4. Ecstasy
5. Pleasure **[SSC (CPO) 2011]**
(a) 1, 4, 2, 5, 3 (b) 2, 1, 3, 4, 5
(c) 3, 2, 5, 1, 4 (d) 4, 1, 3, 2, 5

14. 1. Punishment 2. Prison
3. Arrest 4. Crime
5. Judgement
(a) 5, 1, 2, 3, 4 (b) 4, 3, 5, 2, 1
(c) 4, 3, 5, 1, 2 (d) 2, 3, 1, 4, 5

15. 1. Elephant 2. Cat
3. Mosquito 4. Tiger
5. Whale
(a) 1, 3, 5, 4, 2
(b) 2, 5, 1, 4, 3
(c) 3, 2, 4, 1, 5
(d) 5, 3, 1, 2, 4

16. 1. Country 2. District
3. State 4. Village
5. Continent [SSC (CPO) 2013]
(a) 5, 4, 3, 2, 1 (b) 1, 3, 2, 5, 4
(c) 4, 2, 3, 1, 5 (d) 2, 1, 3, 5, 4

17. 1. Frog 2. Eagle
3. Grasshopper 4. Snake
5. Grass
(a) 1, 3, 5, 2, 4 (b) 3, 4, 2, 5, 1
(c) 5, 3, 1, 4, 2 (d) 5, 3, 4, 2, 1

18. 1. Mother 2. Child
3. Milk 4. Cry
5. Smile [SSC (CPO) 2010]
(a) 1, 5, 2, 4, 3 (b) 2, 4, 1, 3, 5
(c) 2, 4, 3, 1, 5 (d) 3, 2, 1, 5, 4

19. 1. Child 2. Job
3. Marriage 4. Infant
5. Education
(a) 1, 3, 5, 2, 4 (b) 4, 3, 5, 2, 1
(c) 4, 1, 5, 2, 3 (d) 2, 3, 1, 4, 5

20. 1. Plant 2. Fruit
3. Seed 4. Flower [SSC (10+2) 2013]
(a) 3, 2, 4, 1 (b) 3, 1, 2, 4
(c) 3, 1, 4, 2 (d) 3, 2, 1, 4

21. 1. Butterfly 2. Cocoon
3. Egg 4. Worm [NIFT (UG) 2012]
(a) 1, 3, 4, 2 (b) 1, 4, 3, 2 (c) 2, 4, 1, 3 (d) 3, 4, 2, 1

22. 1. Protect 2. Pressure
3. Relief 4. Rain
5. Flood
(a) 2, 4, 3, 1, 5 (b) 2, 4, 5, 1, 3
(c) 2, 5, 4, 1, 3 (d) 3, 2, 4, 5, 1

23. 1. Curd 2. Butter
3. Milk 4. Cow
(a) 4, 3, 1, 2 (b) 4, 3, 2, 1 (c) 4, 1, 3, 2 (d) 1, 3, 2, 4

24. 1. Atomic age 2. Metallic age
3. Stone age 4. Alloy age
(a) 1, 3, 4, 2 (b) 2, 3, 1, 4
(c) 3, 2, 4, 1 (d) 4, 3, 2, 1

25. 1. Consultation 2. Illness
3. Doctor 4. Treatment
5. Recovery [SSC (CPO) 2012]
(a) 2, 3, 1, 4, 5 (b) 2, 3, 4, 1, 5
(c) 4, 3, 1, 2, 5 (d) 5, 1, 4, 3, 2

26. 1. Presentation 2. Recommendation
3. Arrival 4. Discussion
5. Introduction
(a) 3, 5, 1, 4, 2 (b) 3, 5, 4, 2, 1
(c) 5, 3, 1, 2, 4 (d) 5, 3, 4, 1, 2

27. 1. Windows 2. Walls
3. Floor 4. Foundation
5. Roof 6. Room [UP B.Ed. 2007]
(a) 4, 5, 3, 2, 1, 6 (b) 4, 3, 5, 6, 2, 1
(c) 4, 2, 1, 5, 3, 6 (d) 4, 1, 5, 6, 2, 3

28. 1. Probation 2. Interview
3. Selection 4. Appointment
5. Advertisement 6. Application [SSC (FCI) 2012]
(a) 5, 6, 2, 3, 4, 1 (b) 5, 6, 3, 2, 4, 1
(c) 5, 6, 4, 2, 3, 1 (d) 6, 5, 4, 2, 3, 1

29. 1. Rainbow 2. Rain
3. Sun 4. Happy
5. Child
(a) 2, 1, 4, 3, 5 (b) 2, 3, 1, 5, 4
(c) 4, 2, 3, 5, 1 (d) 4, 5, 1, 2, 3

30. 1. Study 2. Job
3. Examination 4. Earn
5. Apply
(a) 1, 2, 3, 4, 5 (b) 1, 3, 2, 5, 4
(c) 1, 3, 5, 4, 2 (d) 1, 3, 5, 2, 4

31. 1. Postbox 2. Letter
3. Envelope 4. Delivery
5. Clearance [SSC (CGL) 2013]
(a) 3, 2, 4, 5, 1 (b) 3, 2, 1, 5, 4
(c) 3, 2, 1, 4, 5 (d) 2, 3, 1, 4, 5

32. 1. Key 2. Door
3. Lock 4. Room
5. Switch on [SSC (CPO) 2012]
(a) 5, 1, 2, 4, 3 (b) 4, 2, 1, 5, 3
(c) 1, 2, 3, 5, 4 (d) 1, 3, 2, 4, 5

33. 1. Birth 2. Death
3. Funeral 4. Marriage
5. Education [SSC (CGL) 2009]
(a) 4, 5, 3, 1, 2 (b) 2, 3, 4, 5, 1
(c) 1, 5, 4, 2, 3 (d) 1, 3, 4, 5, 2

34. 1. Caste 2. Family
3. Newly married couple 4. Clan
5. Species
(a) 2, 3, 1, 4, 5 (b) 3, 2, 1, 4, 5
(c) 3, 4, 5, 1, 2 (d) 4, 5, 3, 2, 1

35. 1. Weaving 2. Cotton
3. Cloth 4. Thread
[SSC (Multitasking) 2014]
(a) 2, 4, 1, 3 (b) 2, 4, 3, 1
(c) 4, 2, 1, 3 (d) 3, 1, 4, 2

36. 1. Farmer 2. Seed
3. Food 4. Cultivation
[SSC (Multitasking) 2014]
(a) 1, 2, 4, 3 (b) 2, 1, 3, 4
(c) 4, 2, 3, 1 (d) 3, 1, 4, 2

37. 1. Compose 2. Appreciation
3. Money 4. Think
5. Sing
[CG PSC 2013]
(a) 1,4, 2, 5, 3 (b) 4, 1, 5, 2, 3
(c) 2, 4, 3, 5, 1 (d) 5, 4, 2, 1, 3
(e) 3, 2, 4, 1, 5

38. 1. Twilight 2. Dawn
3. Noon 4. Night **[SSC (10+2) 2013]**
(a) 2, 1, 3, 4 (b) 2, 3, 1, 4
(c) 1, 2, 3, 4 (d) 1, 3, 2, 4

39. 1. Sending 2. Encoding
3. Receiving 4. Decoding **[SSC (10+2) 2013]**
(a) 2, 4, 3,1 (b) 4, 2, 1, 3
(c) 1, 2, 3, 4 (d) 2, 1, 3, 4

40. 1. Implementation
2. Conceptual Modelling
3. Requirements Analysis
4. Logical Modelling
5. Physical Model
6. Schema Refinement **[SSC (CGL) 2013]**
(a) 3, 2, 4, 6, 5, 1 (b) 1, 3, 2, 6, 5, 4
(c) 3, 2, 5, 4, 6, 1 (d) 3, 2, 1, 4, 6, 5

41. Which one of the given responses would be a meaningful order of the following continents in descending order of area?
1. South America 2. Africa
3. Europe 4. Australia
5. North America **[SSC (CGL) 2013]**
(a) 2, 1, 5, 3, 4 (b) 2, 5, 1, 3, 4
(c) 2, 5, 1, 4, 3 (d) 2, 1, 5, 4, 3

Directions (Q. Nos. 42-47) Which one of the given responses would be a meaningful order of the following words in ascending/order?

42. 1. Collector 2. Governor
3. Chief Secretary 4. President
5. Clerk **[SSC (Steno) 2012]**
(a) 1, 2, 3, 4, 5 (b) 5, 1, 3, 2, 4
(c) 5, 1, 3, 4, 2 (d) 5, 1, 4, 3, 2

43. 1. Weekly 2. Daily
3. Monthly 4. Fortnightly
5. Bimonthly **[SSC (Steno) 2012]**
(a) 1, 4, 3, 2, 5 (b) 2, 1, 4, 3, 5
(c) 4, 1, 2, 3, 5 (d) 5, 1, 2, 3, 4

44. 1. Shoulder 2. Wrist
3. Elbow 4. Palm
5. Finger **[SSC (Steno) 2012]**
(a) 5, 4, 2, 3, 1 (b) 3, 4, 5, 2, 1
(c) 3, 1, 4, 2, 5 (d) 2, 4, 5, 3, 1

45. 1. Income 2. Status
3. Education 4. Well-being
5. Job
(a) 1, 3, 2, 5, 4 (b) 1, 2, 5, 3, 4
(c) 3, 1, 5, 2, 4 (d) 3, 5, 1, 2, 4

46. 1. Foetus 2. Child
3. Baby 4. Adult
5. Youth
(a) 1, 2, 4, 3, 5 (b) 1, 3, 2, 5, 4
(c) 2, 3, 5, 4, 1 (d) 5, 4, 2, 3, 1

47. 1. Hecto 2. Centi
3. Deca 4. Kilo
5. Deci
(a) 2, 5, 3, 1, 4 (b) 1, 3, 4, 5, 2
(c) 1, 5, 3, 4, 2 (d) 5, 2, 1, 4, 3

Directions (Q. Nos. 48-59) Arrange the following words as per order in the dictionary.

48. 1. Divide 2. Divisions
3. Devine 4. Divest
5. Direct **[SSC (CPO) 2013]**
(a) 5, 4, 3, 1, 2 (b) 5, 4, 1, 3, 2
(c) 1, 2, 3, 4, 5 (d) 3, 5, 4, 1, 2

49. 1. Hair 2. Heena
3. Harmonium 4. Host
(a) 2, 3, 4, 1
(b) 1, 3, 4, 2
(c) 1, 3, 2, 4
(d) 3, 1, 2, 4

50. 1. Bound 2. Bonus
3. Bunch 4. Board **[SSC (10 + 2) 2013]**
(a) 1, 4, 2, 3 (b) 2, 4, 3, 1
(c) 4, 2, 1, 3 (d) 4, 3, 2, 1

51. 1. Joker 2. Humanistic
3. Carpenter 4. Animated
(a) 4, 3, 2, 1 (b) 4, 1, 2, 3
(c) 3, 2, 4, 1 (d) 1, 3, 2, 4

52. 1. Billion 2. Bifurcate
3. Bilateral 4. Bilirubin
(a) 2,1,3,4 (b) 4,3,2,1
(c) 2,3,4,1 (d) 2,3,1,4

53. 1. Error 2. Disaster
3. Jacob 4. Fecund
(a) 1, 2, 3, 4 (b) 2, 1, 4, 3
(c) 3, 2, 1, 4 (d) 2, 3, 4, 1

54. 1. Ambitious 2. Ambiguous
3. Ambiguity 4. Animation
5. Animals
(a) 3, 2, 4, 1, 5 (b) 3, 2, 5, 4, 1
(c) 3, 2, 1, 5, 4 (d) 3, 2, 4, 5, 1

55. 1. Artistic 2. Anonymous
3. Antonymous 4. Arrogant
(a) 1, 2, 3, 4 (b) 2, 3, 4, 1
(c) 3, 2, 1, 4 (d) 3, 4, 1, 2

56. 1. Necrology 2. Necromancy
3. Necropolis 4. Necrophilia
[SSC (CGL) April 2014]
(a) 2,1, 4, 3 (b) 1, 2, 3, 4
(c) 1, 2, 4, 3 (d) 2, 1, 3, 4

57. 1. Important 2. Impart
3. Improvise 4. Improve
(a) 1, 2, 3, 4 (b) 2, 1, 4, 3 (c) 3, 4, 1, 2 (d) 2, 1, 3, 4

58. 1. Aqueous 2. Aquarium
3. Aquiline 4. Aquatic
(a) 4, 3, 2, 1 (b) 1, 2, 3, 4
(c) 2, 4, 1, 3 (d) 3, 1, 4, 2

59. 1. Epitaxy 2. Episode
3. Epigene 4. Epitome
5. Epilogue **[NIFT (PG) 2014]**
(a) 1, 2, 3, 4, 5 (b) 3, 2, 1, 5, 4
(c) 3, 5, 2, 1, 4 (d) 1, 3, 2, 5, 4

Answers (Master Exercise)

1. (b)	**2.** (a)	**3.** (c)	**4.** (c)	**5.** (c)	**6.** (c)	**7.** (b)	**8.** (b)	**9.** (b)	**10.** (c)
11. (b)	**12.** (a)	**13.** (c)	**14.** (c)	**15.** (c)	**16.** (c)	**17.** (c)	**18.** (b)	**19.** (c)	**20.** (c)
21. (d)	**22.** (b)	**23.** (a)	**24.** (c)	**25.** (a)	**26.** (a)	**27.** (c)	**28.** (a)	**29.** (b)	**30.** (d)
31. (b)	**32.** (d)	**33.** (c)	**34.** (b)	**35.** (a)	**36.** (a)	**37.** (b)	**38.** (b)	**39.** (d)	**40.** (c)
41. (b)	**42.** (b)	**43.** (b)	**44.** (a)	**45.** (d)	**46.** (b)	**47.** (a)	**48.** (d)	**49.** (c)	**50.** (c)
51. (a)	**52.** (c)	**53.** (b)	**54.** (c)	**55.** (b)	**56.** (c)	**57.** (b)	**58.** (c)	**59.** (c)	

7

Inserting the Missing Character

Inserting the Missing Character is filling-up of the empty (missing) spaces in letter and number puzzles given in pictorial forms.

Different types of questions covered in this chapter are as follows

- Number Puzzles
- Letter Puzzles
- Alpha-Numeric Puzzles

Under this segment of reasoning, numbers or letters or both are represented through one or more figures (geometrical or any other figure). Such numbers or letters are arranged inside the figure according to a certain pattern (*i.e.,* based on particular logic and/or mathematical calculations) but in such arrangement one character is missing which is denoted by question mark (?). The candidate is required to find out the character that can replace the question mark (?) satisfying the logic and calculations.

Various puzzles based on inserting the missing character that are asked in various competitive exams are classified into following types

Type 1 Number Puzzles

In such type of problems, some numbers are arranged in a certain pattern, which can follow the rule of addition, subtraction, multiplication, division, squaring or cubing of consecutive numbers etc. Based on these different operations we have to find the missing character in the given problems.

Following examples will give you better idea about such types of problems

Directions (Example Nos. 1-9) Find the missing character from the given alternatives.

***Ex* 1**

35	40
?	45

(a) 554 (b) 48 (c) 52 (d) 50

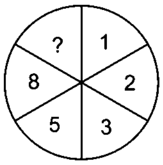
Sol. (*d*) Moving clockwise, the pattern is as follows

$35 + 5 = 40$ and $40 + 5 = 45$

So, missing number $= 45 + 5 = \boxed{50}$

Hence, option (d) is the answer.

***Ex* 2**



[LIC (ADO) 2010]

(a) 10 (b) 15 (c) 13 (d) 12
(e) None of these

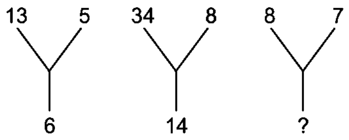
Sol. (c) The pattern in clockwise direction is

$1 + 2 = 3,\quad 2 + 3 = 5$

$3 + 5 = 8,\quad 5 + 8 = 13$

$\therefore\quad ? = \boxed{13}$

***Ex* 3**



(a) 2 (b) 4 (c) 5 (d) 11

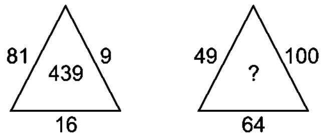
Sol. (c) As, $\dfrac{13+5}{3} = 6$

and $\dfrac{34+8}{3} = 14$

Similarly, missing number $= \dfrac{8+7}{3} = \boxed{5}$

Hence, option (c) is the correct answer.

***Ex* 4**



(a) 8710 (b) 1078 (c) 8107 (d) 789

Sol. (c) Numbers placed along the sides of the triangle are the squares of the numbers at the centre of the triangle, as shown below

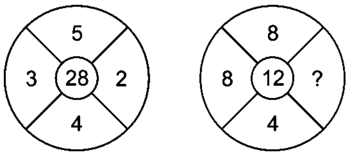
$(4)^2 = 16, (3)^2 = 9, (9)^2 = 81$

Similarly, $\sqrt{64} = 8, \sqrt{100} = 10, \sqrt{49} = 7$

So, the missing number $= \boxed{8107}$

Hence, option (c) is the correct answer

***Ex* 5**



(a) 3 (b) 9 (c) 1 (d) 2

Sol. (d) As, $\{(5)^2 + (4)^2\} - \{(3)^2 + (2)^2\}$

$= (25 + 16) - (9 + 4)$

$= 41 - 13 = 28$

Similarly, $\{(8)^2 + (4)^2\} - \{(8)^2 + (?)^2\} = 12$

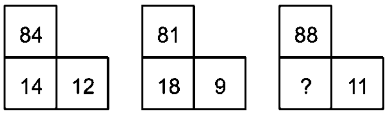
$\Rightarrow\quad (64 + 16) - \{64 + (?)^2\} = 12$

$\Rightarrow\quad ?^2 = 4$

So, the missing number $= \boxed{2}$

Hence, option (d) is the correct answer.

***Ex* 6**



[SSC (CGL) 2013]

(a) 7 (b) 16
(c) 21 (d) 28

Sol. (b) According to the question, the pattern is as follows

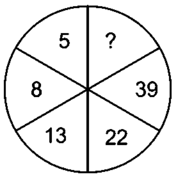
As, $84 \div 12 = 7;\ 7 \times 2 = 14$

and $81 \div 9 = 9;\ 9 \times 2 = 18$

Similarly, $88 \div 11 = 8$ and $8 \times 2 = 16$

Hence, option (b) is the correct answer

***Ex* 7**



[SSC (CPO) 2013]

(a) 66 (b) 72
(c) 71 (d) 78

Sol. (b) The pattern is as follows

$(5 \times 2) - 2 = 8$

$(8 \times 2) - 3 = 13$

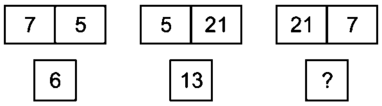
$(13 \times 2) - 4 = 22$

$(22 \times 2) - 5 = 39$

$(39 \times 2) - 6 = 72$

$\therefore\quad ? = \boxed{72}$

***Ex* 8**



[UPSC (CSAT) 2013]

(a) 4 (b) 8
(c) 20 (d) 14

Sol. (d) As, $\dfrac{7+5}{2} = 6$ and $\dfrac{5+21}{2} = 13$

Similarly, missing number $= \dfrac{21+7}{2} = \boxed{14}$

Hence, option (d) is the correct answer.

***Ex* 9**

4	5	6
2	3	7
1	8	3
21	98	?

(a) 85 (b) 94
(c) 104 (d) 49

Sol. (b) As, $(4)^2 + (2)^2 + (1)^2 = 21$

$(5)^2 + (3)^2 + (8)^2 = 98$

Similarly, $(6)^2 + (7)^2 + (3)^2 = 94$

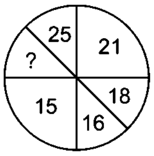
Hence, option (b) is the correct answer.

Practice Corner **7.1**

Build your Confidence...

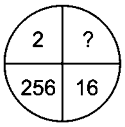
Directions (Q. Nos. 1-41) In each of the following questions, a set of figures carrying certain characters is given. Assuming that the characters in each set follow a similar pattern, find the missing character in each case.

1.



(a) 28 (b) 30 (c) 35 (d) 27

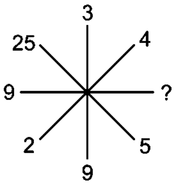
2.



[UP B.Ed. 2007]

(a) 8 (b) 4 (c) 32 (d) 16

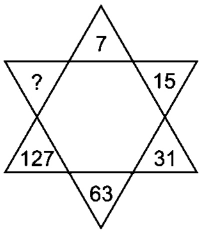
3.



[RRB (TC/CC) 2008]

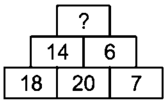
(a) 81 (b) 64 (c) 32 (d) 20

4.



(a) 190 (b) 221 (c) 236 (d) 255

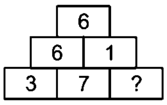
5.



[NIFT (UG) 2013]

(a) 24 (b) 25 (c) 28 (d) 20

6.



[NIFT (UG) 2013]

(a) 12 (b) 18 (c) 9 (d) 3

7.

63	7	9
30	5	6
20	4	?

[SSC (10+2) 2013]

(a) 8 (b) 3 (c) 5 (d) 2

8.

24	25	50
24	20	10
4	9	3
12	5	?

[SSC (10+2) 2013]

(a) 10 (b) 15 (c) 20 (d) 5

9.

7	6	9
2	8	4
4	3	?
36	42	26

[SSC (CGL) 2012]

(a) 5 (b) 2 (c) 3 (d) 4

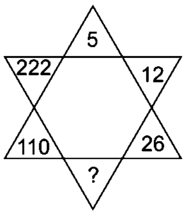
10.

92	70	48
64	53	42
52	45	?

[SSC (Multitasking) 2014]

(a) 36 (b) 40
(c) 38 (d) 42

11.



[SSC (Multitasking) 2013]

(a) 54 (b) 51
(c) 48 (d) 44

12.

9	5	6
5	7	?
3	4	5
135	140	150

[SSC (CGL) 2008]

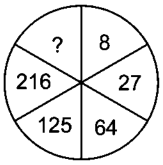
(a) 4 (b) 5
(c) 8 (d) 10

13.

4	1/5	21/5
1	1/2	3/2
2	?	8/3

(a) $\frac{4}{5}$ (b) $\frac{3}{4}$
(c) $\frac{2}{3}$ (d) $\frac{1}{2}$

14.


?
8
216
27
125
64

[SSC (CPO) 2010]

(a) 729 (b) 343 (c) 305 (d) 4

15.

6	15	20
8	4	5
3	5	20
51	65	?

[SSC (CGL) 2013]

(a) 12 (b) 56 (c) 120 (d) 51

16.

14	9	12	20
4	9	8	10
12	13	7	20
3	3	11	?
20	42	19	40

[UP B.Ed. 2009]

(a) 2 (b) 8
(c) 12 (d) 14

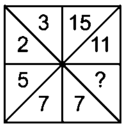
17.

17	8	5	5
13	7	5	4
6	12	6	3
10	6	4	?

[IB (ACIO) 2013]

(a) 4 (b) 5 (c) 6 (d) 7

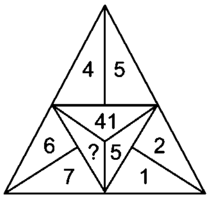
18.



[SSC (Steno) 2005]

(a) 5 (b) 12
(c) 13 (d) 26

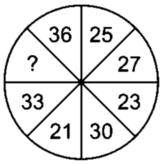
19.



[CMAT 2013]

(a) 16 (b) 9
(c) 85 (d) 112

20.


36
25
?
27
33
23
21
30

[SSC (CPO) 2005]

(a) 19 (b) 22
(c) 32 (d) 35

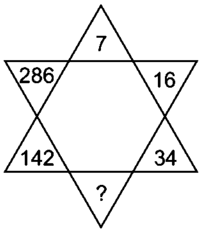
21.

11	12	13
14	15	16
2	3	4
39	57	?

[SSC (CPO) 2013]

(a) 87 (b) 75 (c) 85 (d) 77

22.


7
286
16
142
34
?

(a) 38 (b) 66
(c) 68 (d) 70

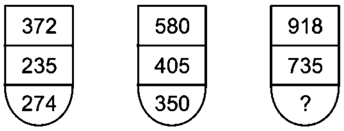
23.

8	12	13
6	5	10
$\frac{2}{4}$	$\frac{8}{15}$	$\frac{?}{18}$

[SSC (CGL) April 2014]

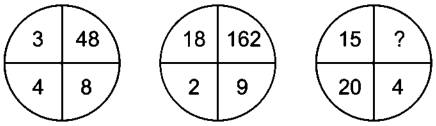
(a) 3 (b) 15
(c) 5 (d) 6

24.


372
235
274
580
405
350
918
735
?

(a) 432 (b) 366
(c) 345 (d) 482

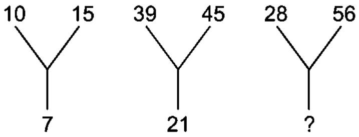
25.


3
48
4
8
18
162
2
9
15
?
20
4

[MAT 2009]

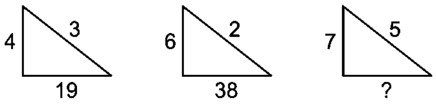
(a) 600 (b) 550
(c) 435 (d) 172

26.


10
15
7
39
45
21
28
56
?

(a) 21 (b) 28
(c) 35 (d) 10

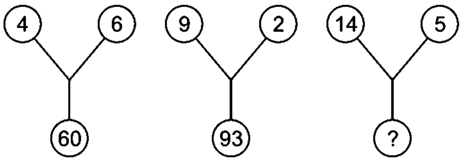
27.


4
3
19
6
2
38
7
5
?

[UP B.Ed. 2011]

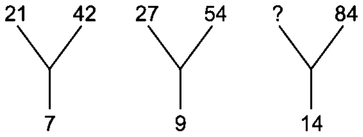
(a) 55
(b) 51
(c) 54
(d) 58

28.


4
6
60
9
2
93
14
5
?

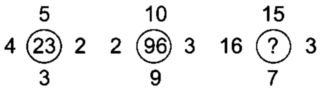
(a) 229 (b) 95 (c) 148 (d) 67

29.


21
42
7
27
54
9
?
84
14

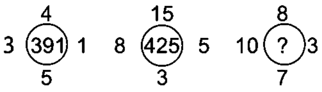
(a) 32 (b) 48 (c) 42 (d) 37

30.


5
4
23
2
3
10
2
96
3
9
15
16
?
3
7

(a) 85 (b) 153 (c) 99 (d) 149

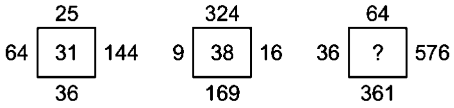
31.


4
3
391
1
5
15
8
425
5
3
8
10
?
3
7

[MAT 2012]

(a) 890 (b) 2236 (c) 975 (d) 3540

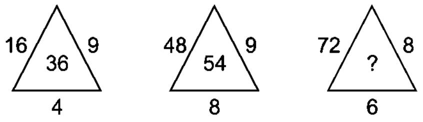
32.


25
64
31
144
36
324
9
38
16
169
64
36
?
576
361

[Hotel Mgmt 2011]

(a) 115 (b) 82 (c) 135 (d) 57

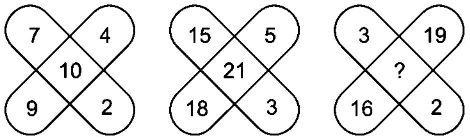
33.


16
36
9
4
48
54
9
8
72
?
8
6

[SSC (CGL) 2008]

(a) 96 (b) 76 (c) 48 (d) 32

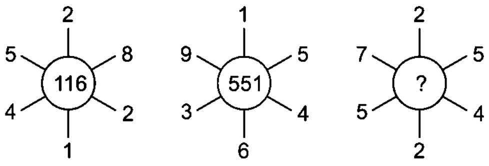
34.


7
4
10
9
2
15
5
21
18
3
3
19
?
16
2

[Hotel Mgmt 2012]

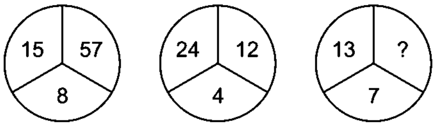
(a) 25 (b) 88 (c) 9 (d) 17

35.


2
5
8
116
4
2
1
1
9
5
551
3
4
6
2
7
5
?
5
4
2

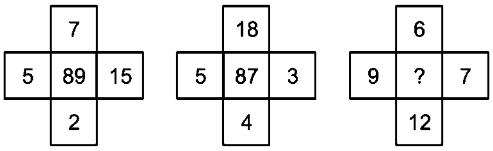
(a) 287 (b) 215
(c) 201 (d) 275

36.


15
57
8
24
12
4
13
?
7

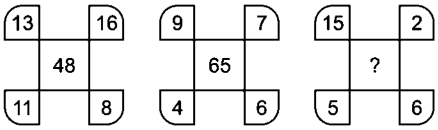
(a) 14 (b) 55
(c) 23 (d) 50

37.


7
5
89
15
2
18
5
87
3
4
6
9
?
7
12

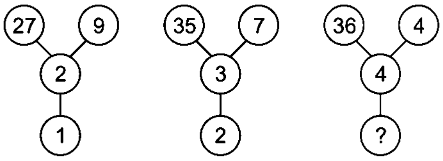
(a) 135 (b) 85
(c) 195 (d) 95

38.


13
16
48
11
8
9
7
65
4
6
15
2
?
5
6

(a) 90 (b) 87
(c) 53 (d) 80

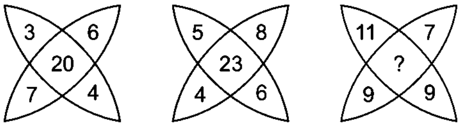
39.


27
9
2
1
35
7
3
2
36
4
4
?

[SSC (Multitasking) 2013]

(a) 3 (b) 4
(c) 5 (c) 6

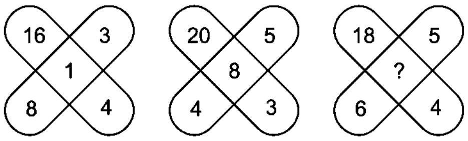
40.


3
6
20
7
4
5
8
23
4
6
11
7
?
9
9

[RRB (ASM) 2005]

(a) 77
(b) 36
(c) 99
(d) 63

41.


16
3
1
8
4
20
5
8
4
3
18
5
?
6
4

[UP B.Ed. 2008]

(a) 3
(b) 10
(c) 15
(d) 60

Response & Interpretations **(7.1)**

1. (*b*) Moving anti-clockwise, the pattern is as follows

$$15+1=16$$
$$16+2=18$$
$$18+3=21$$
$$\text{and}\quad 21+4=25$$

So, missing number $25+5=\boxed{30}$

Hence, the answer is option (b).

2. (*b*) The pattern in clockwise direction

$$2\xrightarrow{\times 2}\boxed{4}\xrightarrow{\times 4}16\xrightarrow{\times 16}256$$

$\therefore\quad ?=4$

3. (*a*) As, $2^2\longrightarrow 4,\ 3^2\longrightarrow 9,\ 5^2\longrightarrow 25$

Similarly, $9^2\longrightarrow 81$

$\therefore\quad ?=\boxed{81}$

4. (*d*) The pattern in clockwise direction is

$$(7\times 2)+1=15$$
$$(15\times 2)+1=31$$
$$(31\times 2)+1=63$$
$$(63\times 2)+1=127$$

$\therefore\quad ?=(127\times 2)+1=\boxed{255}$

5. (*b*) Here, the pattern is as follows

$$14+6=20$$

Similarly, $18+7=\boxed{25}$

Hence, the answer is option (b).

6. (*d*) Here, the pattern is as follows

$$6+1=7$$

Similarly, $3+?=6$

$\Rightarrow\quad ?=6-3$

or $\quad ?=\boxed{3}$

Hence, the answer is option (d).

7. (*c*) As, $7\times 9=63$ and $5\times 6=30$

Similarly, $4\times ?=20\quad\Rightarrow\quad ?=\frac{20}{4}=\boxed{5}$

8. (*c*) As, $(24+24)\div 12=4$

and $(25+20)\div 5=9$

Similarly, $(50+10)\div ?=3$

$$60\div ?=3$$
$$?=\frac{60}{3}=\boxed{20}$$

9. (*b*) As, $7+2=9;\quad 9\times 4=36$

$6+8=14;\quad 14\times 3=42$

Similarly, $9+4=13$ and $13\times 2=26$

Hence, number 2 will come in place of question mark.

10. (*c*) As, $92+64+52=208$

-40

and $70+53+45=168$

-40

Similarly, $48+42+\boxed{38}=128$

11. (*a*) Pattern given in figure is as follows

$$5\times 2+2=12,\ 12\times 2+2=26$$
$$26\times 2+2=\boxed{54},\quad 54\times 2+2=110$$

So, the missing number is 54.

12. (*b*) The pattern is as follows

$$9\times 5\times 3=135$$
$$5\times 7\times 4=140$$

Similarly, $6\times\boxed{5}\times 5=150$

Hence, number 5 will come in place of question mark.

13. (*c*) As, $\left(4+\frac{1}{5}\right)=\frac{21}{5}$

and $\left(1+\frac{1}{2}\right)=\frac{3}{2}$

Similarly, $2+\boxed{\frac{2}{3}}=\frac{8}{3}$

Hence, 2/3 will come in place of question mark.

14. (*b*) The pattern in clockwise direction is

$2^3, 3^3, 4^3, 5^3, 6^3$ and 7^3.

$\therefore\quad ?=7^3=\boxed{343}$

15. (*c*) As, $(6\times 8)+3=51$

$(15\times 4)+5=65$

Similarly, $(20\times 5)+20=\boxed{120}$

Hence, option (c) is the correct answer.

16. (*b*) As, $(14\times 4-20)\div 12=3$

$(9\times 9-42)\div 13=3$

and $(12\times 8-19)\div 7=11$

Similarly, $(20\times 10-40)\div 20=\boxed{8}$

17. (*a*) Here, In Row 1 : $\frac{17+8}{5}=5$

In Row 2 : $\frac{13+7}{5}=4$

In Row 3 : $\frac{6+12}{6}=3$

In Row 4 : $\frac{10+6}{4}=\boxed{4}$

18. (*a*) As, $(3\times 2)+1=7$

$(5\times 2)+1=11$

and $(7\times 2)+1=15$

Similarly, $?=2\times 2+1=\boxed{5}$

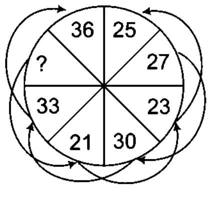
19. (*c*) The pattern in the question is

$4^2+5^2=16+25=41,\quad 2^2+1^2=4+1=5,$

$7^2+6^2=49+36=\boxed{85}$

Hence option (c) is the correct answer.

20. (*a*) Starting from 27 and moving clockwise, the number in alternate segments form the series, 27, 30, 33, 36. The numbers in the remaining segments moving anti-clockwise, form the series as shown below.



?, 21, 23, 25 or 21, 23, 25, ?

∴ $? = \boxed{19}$ or 27

21. (*d*) As, $11 + (14 \times 2) = 11 + 28 = 39$

and $12 + (15 \times 3) = 12 + 45 = 57$

Similarly, $13 + (16 \times 4) = 13 + 64 = \boxed{77}$

22. (*d*) Here, the pattern is as follows

$7 \times 2 + 2 = 16$, $16 \times 2 + 2 = 34$

$34 \times 2 + 2 = \boxed{70}$, $70 \times 2 + 2 = 142$

$142 \times 2 + 2 = 286$

Hence, option (d) is the correct answer.

23. (*b*) As, $8 - 6 + 2 = 4$

and $12 - 5 + 8 = 15$

Similarly, $13 - 10 + \boxed{?} = 18$

$\Rightarrow 3 + ? = 18$

$\Rightarrow ? = \boxed{15}$

Hence, number 15 will come in place of question mark.

24. (*b*) As, $(372 - 235) \times 2 = 274$

and $(580 - 405) \times 2 = 350$

Similarly, $(918 - 735) \times 2 = \boxed{366}$

25. (*a*) Moving in anti-clockwise direction in each of the figures, we have

$\frac{3 \times 4 \times 8}{2} = 48$

and $\frac{18 \times 2 \times 9}{2} = 162$

Similarly, $\frac{15 \times 20 \times 4}{2} = \boxed{600}$

Hence, option (a) is the correct answer.

26. (*a*) As, $(1 + 0 + 1 + 5) = 7$

and $(3 + 9 + 4 + 5) = 21$

Similarly, $(2 + 8 + 5 + 6) = \boxed{21}$

Hence, option (a) is the correct answer.

27. (*c*) As, $4^2 + 3 = 19$

and $6^2 + 2 = 38$

Similarly, $7^2 + 5 = \boxed{54}$

Hence, option (c) is the correct answer.

28. (*a*) As, $(4^2 + 6^2) + 8 = 60$

and $(9^2 + 2^2) + 8 = 93$

Similarly, $(14^2 + 5^2) + 8 = \boxed{229}$

Hence, number 229 will come in place of question mark.

29. (*c*) Here, the pattern is as follows

$7 \times 3 = 21$; $21 \times 2 = 42$

$9 \times 3 = 27$; $27 \times 2 = 54$

Similarly, $14 \times 3 = ? = \boxed{42}$

and $42 \times 2 = 84$

So, the missing number $= \boxed{42}$

Hence, option (c) is the correct answer.

30. (*b*) As, $(4 \times 2) + (5 \times 3) = 23$

and $(2 \times 3) + (10 \times 9) = 96$

Similarly, $(16 \times 3) + (15 \times 7) = \boxed{153}$

Hence, number 153 will come in place of the question mark.

31. (*b*) As, $(4 \times 5)^2 - (3 \times 1)^2 = 391$

and $(15 \times 3)^2 - (8 \times 5)^2 = 425$

Similarly, $(8 \times 7)^2 - (10 \times 3)^2 = \boxed{2236}$

Hence, 2236 will come in place of question mark.

32. (*d*) As, $(\sqrt{25} + \sqrt{64} + \sqrt{36} + \sqrt{144}) = 31$

and $(\sqrt{324} + \sqrt{9} + \sqrt{169} + \sqrt{16}) = 38$

Similarly, $(\sqrt{64} + \sqrt{36} + \sqrt{361} + \sqrt{576}) = \boxed{57}$

Hence, option (d) is the correct answer.

33. (*a*) As, $(16 \times 9) \div 4 = 36$

and $(48 \times 9) \div 8 = 54$

Similarly, $(72 \times 8) \div 6 = \boxed{96}$

Hence, number 96 will come in place of question mark.

34. (*a*) As, $(7 \times 4) - (9 \times 2) = 10$

and $(15 \times 5) - (18 \times 3) = 21$

Similarly, $(19 \times 3) - (16 \times 2) = \boxed{25}$

Hence, option (a) is the correct answer.

35. (*c*) As, $528 - 412 = 116$

and $915 - 364 = 551$

Similarly, $725 - 524 = \boxed{201}$

36. (*d*) As, $\frac{15 + 57}{9} = 8$ and $\frac{24 + 12}{9} = 4$

Similarly, $\frac{13 + ?}{9} = 7$

∴ $? = (7 \times 9) - 13 = 63 - 13 = \boxed{50}$

37. (*a*) As, $(7 \times 2) + (5 \times 15) = 89$

and $(18 \times 4) + (5 \times 3) = 87$

Similarly, $(6 \times 12) + (9 \times 7) = \boxed{135}$

38. (*d*) As, $(13 - 11) \times (16 + 8) = 48$

and $(9 - 4) \times (7 + 6) = 65$

Similarly, $(15 - 5) \times (2 + 6) = \boxed{80}$

39. (*c*) As, $27 \div 9 - 2 = 3 - 2 = 1$

and $35 \div 7 - 3 = 5 - 3 = 2$

Similarly, $36 \div 4 - 4 = 9 - 4 = \boxed{5}$

40. (*b*) As, $3 + 6 + 7 + 4 = 20$

and $8 + 5 + 4 + 6 = 23$

Similarly, $? = 11 + 9 + 7 + 9 = \boxed{36}$

41. (*a*) As, $16 - (3 + 4 + 8) = 1$

and $20 - (5 + 3 + 4) = 8$

Similarly, $18 - (5 + 4 + 6) = \boxed{3}$

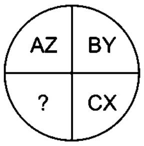
Type 2 Letter Puzzles

In this type of problems, the arrangement of the letters of the English alphabet is done according to a certain pattern that may involve addition/subtraction of the positional values of letters, operations on the positional values of the letters from the end of English Alphabet etc. The candidate is required to find out the rule and the missing character from the arrangement based on that rule.

Following examples will give you better idea about such types of problems

Directions (Example Nos. 10-13) In each of the following questions, which character when placed at the sign of interrogation (?) shall complete the given pattern.

***Ex* 10**



(a) DK (b) DW
(c) DL (d) DE

Sol. (*b*) Moving clockwise, starting with AZ, each quadrant is having a pair of opposite letters in succession.

$$A+Z=1+26=27$$
$$B+Y=2+25=27$$
$$C+X=3+24=27$$

Similarly, $\boxed{D+W}=4+23=27$

Hence, option (b) is the correct answer.

***Ex* 11**

A	D	G
D	I	N
I	P	?

(a) V
(b) W
(c) X
(d) Y

Sol. (*b*) According to English alphabet,

$$\overset{1}{A}\xrightarrow{+3}\overset{4}{D}\xrightarrow{+3}\overset{7}{G}$$
$$\overset{4}{D}\xrightarrow{+5}\overset{9}{I}\xrightarrow{+5}\overset{14}{N}$$
$$\overset{9}{I}\xrightarrow{+7}\overset{16}{P}\xrightarrow{+7}\overset{23}{\boxed{W}}$$

So, the missing character is W.

***Ex* 12**

B	G	N
D	J	R
G	N	?

[SSC (10+2) 2010]

(a) U (b) V (c) W (d) X

Sol. (*c*) According to English alphabet,

$$\overset{2}{B}\xrightarrow{+5}\overset{7}{G}\xrightarrow{+7}\overset{14}{N}$$
$$\overset{4}{D}\xrightarrow{+6}\overset{10}{J}\xrightarrow{+8}\overset{18}{R}$$
$$\overset{7}{G}\xrightarrow{+7}\overset{14}{N}\xrightarrow{+9}\overset{23}{\boxed{W}}$$

So, the missing character is W.

***Ex* 13**

R	Q	L
S	P	M
T	?	N

[SSC (10+2) 2010]

(a) O (b) R
(c) W (d) V

Sol. (*a*) According to English alphabet,
Moving columnwise

$$\overset{18}{R}\xrightarrow{+1}\overset{19}{S}\xrightarrow{+1}\overset{20}{T}$$
$$\overset{17}{Q}\xrightarrow{-1}\overset{16}{P}\xrightarrow{-1}\overset{15}{\boxed{O}}$$
$$\overset{12}{L}\xrightarrow{+1}\overset{13}{M}\xrightarrow{+1}\overset{14}{N}$$

So, the missing character is O.

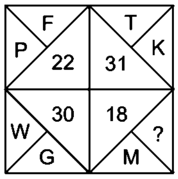
Type 3 Alpha-Numeric Puzzles

In this type of problems, a combination of numbers and letters, arranged according to a pattern, is given in the form of a puzzle. The candidate is required to decipher the underlying pattern and find the missing term(s).

Following examples will give you better idea about such types of problems

Directions (Example Nos. 14-16) In each of the following questions, which character when placed at the sign of interrogation (?) shall complete the given pattern?

***Ex* 14**



[MAT 2010]

(a) F (b) C (c) I (d) E

Sol. (*d*) The positions of letters in the English alphabet are added in this case.

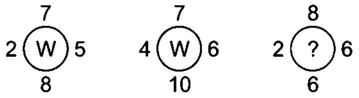
As, 16 + 6 = 22, 20 + 11 = 31
P F T K

and 23 + 7 = 30
W G

Similarly, missing letter is E such that
13 + 5 = 18
M E

Hence, the answer is option (d).

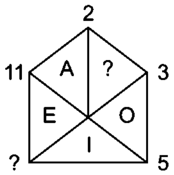
***Ex* 15**



(a) R (b) M
(c) A (d) V

Sol. (*a*) As, (7 × 8) − (2 × 5) = 56 − 10 = 46
and 46 ÷ 2 = 23 = W
and (7 × 10) − (4 × 6) = 70 − 24 = 46
and 46 ÷ 2 = 23 = W
Similarly, (8 × 6) − (2 × 6) = 48 − 12 = 36
and 36 ÷ 2 = 18 = $\boxed{R}$
Hence, the answer is option (a).

***Ex* 16**



[SSC (CPO) 2009]

(a) 8 and U (b) 8 and V
(c) 7 and U (d) 9 and V

Sol. (*c*) According to the given sequence of groups of letters and numbers,

Prime numbers are increasing in clockwise direction. Starting with A in anti-clockwise direction all letters are the group of vowels *i.e.*, A, E, I, O and U.

So, the missing number will be 7 and the last vowel will be U. Hence, the answer is option (c).

Practice Corner 7.2

Build your Confidence...

Directions (Q. Nos. 1-36) In each of the following questions, which character when placed at the sign of interrogation (?) shall complete the given pattern.

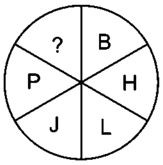
1.

A	D
?	G

[UP B. Ed. 2010]

(a) H (b) J
(c) I (d) M

2.



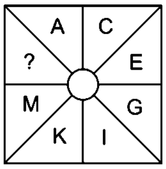
(a) U (b) V
(c) T (d) X

3.

L	C	H	G	F
O	X	?	T	U

(a) S (b) K
(c) T (d) Y

4.



[SSC (CPO) 2011]

(a) B (b) W (c) O (d) V

5.

S	X	Q
19	24	?

(a) 25 (b) 17 (c) 30 (d) 26

6.

B	J	Q	E	?
2	10	17	?	8

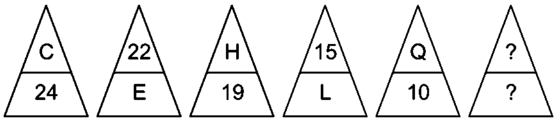
(a) H and 5 (b) F and 6 (c) H and 6 (d) 5 and H

7.

A	22	I	12	?
26	E	18	O	?

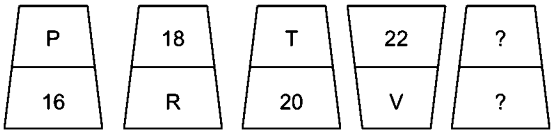
(a) $\frac{13}{P}$ (b) $\frac{15}{Q}$ (c) $\frac{U}{6}$ (d) $\frac{6}{U}$

8.


C
24
22
E
H
19
15
L
Q
10
?
?

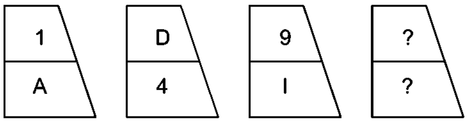
(a) $\frac{15}{R}$ (b) $\frac{4}{W}$ (c) $\frac{S}{11}$ (d) $\frac{4}{X}$

9.


P
16
18
R
T
20
22
V
?
?

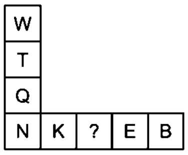
(a) $\frac{U}{15}$ (b) $\frac{W}{23}$ (c) $\frac{X}{24}$ (d) $\frac{W}{24}$

10.



(a) $\frac{J}{10}$ (b) $\frac{M}{13}$ (c) $\frac{P}{16}$ (d) $\frac{P}{11}$

11.



(a) H (b) L (c) G (d) F

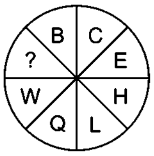
12.

D	M	V
F	P	Z
H	S	?

[CG PSC 2013]

(a) D
(b) C
(c) I
(d) G
(e) K

13.



(a) Z (b) X
(c) I (d) D

14.

A	D	H
F	I	M
?	N	R

[SSC (Multitasking) 2009, MAT 2005]

(a) K (b) N
(c) O (d) P

15.

H	C	?
B	F	E
P	R	T

[IIFT 2012]

(a) Y (b) O
(c) D (d) G

16.

F	I	O
A	J	K
E	M	?

[Hotel Mgmt 2009]

(a) P (b) R
(c) S (d) V

17.

AZ	BY	CX
DW	EV	FU
GT	?	IR

[SSC (CPO) 2011]

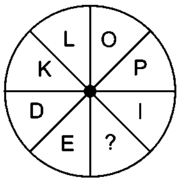
(a) HR (b) HS
(c) HV (d) HU

18.

A	M	B	N
R	C	S	D
E	U	F	?

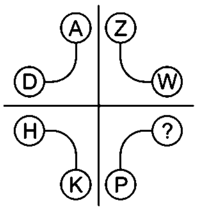
(a) G (b) R
(c) T (d) V

19.



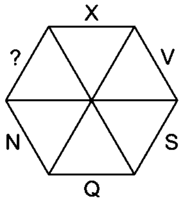
(a) G (b) U
(c) V (d) H

20.



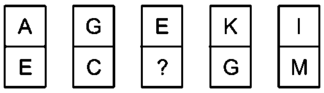
(a) Y (b) Q (c) S (d) R

21.



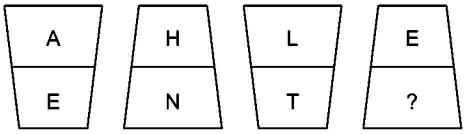
(a) Y (b) W (c) L (d) M

22.



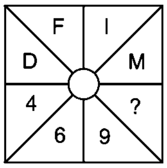
H (a) D (b) I (c) F (d)

23.



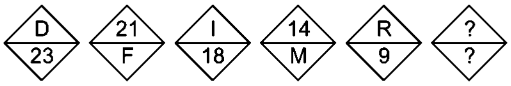
(a) U (b) V
(c) W (d) O

24.



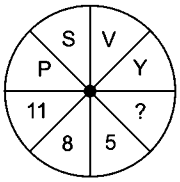
(a) 10 (b) 13 (c) 12 (d) 14

25.


D
23
21
F
I
18
14
M
R
9
?
?

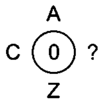
(a) $\frac{S}{10}$ (b) $\frac{3}{X}$ (c) $\frac{U}{4}$ (d) $\frac{6}{U}$

26.



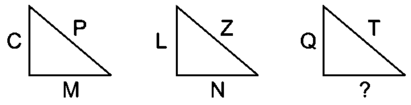
(a) 3 (b) 7
(c) 2 (d) 3

27.



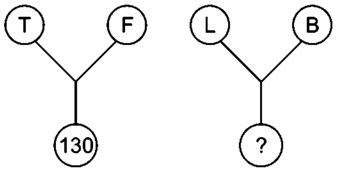
(a) Y (b) D (c) W (d) X

28.



(a) O (b) C (c) S (d) J

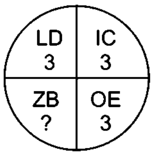
29.



[UP B.Ed. 2011]

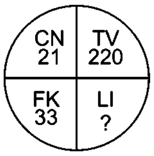
(a) 118 (b) 75
(c) 205 (d) 70

30.


LD
3
IC
3
ZB
?
OE
3

(a) 3 (b) 16 (c) 5 (d) 13

31.


CN
21
TV
220
FK
33
LI
?

[SSC (CGL) 2009]

(a) 54 (b) 58 (c) 65 (d) 85

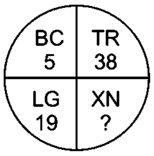
32.

4C	2B	3A
28A	?	45B
7C	8A	15B

[SSC (CPO) 2007]

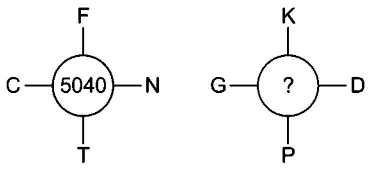
(a) 16 C (b) 12 C (c) 13 C (d) 7 C

33.


BC
5
TR
38
LG
19
XN
?

(a) 15 (b) 42 (c) 38 (d) 5

34.


F
C
5040
N
T
K
G
?
D
P

(a) 8145 (b) 3437 (c) 9256 (d) 4928

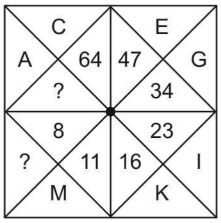
35.

A 2	C 4	E 6
G 3	I 5	?
M 5	O 9	Q14

[SSC (CGL) 2006]

(a) J 15 (b) K 8 (c) K 15 (d) L 10

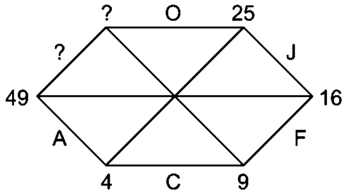
36.



(a) J and 80
(b) O and 83
(c) N and 7
(d) P and 85

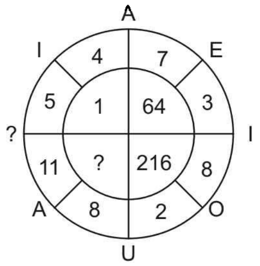
Directions (Q. Nos. 37-38) In each of these questions, choose the missing terms out of the given alternatives.

37.



(a) Y and 40 (b) U and 36 (c) W and 64 (d) X and 81

38.



(a) U and 28 (b) I and 26 (c) E and 27 (d) A and 25

Response & Interpretations (7.2)

1. (*b*) Moving clockwise, each next letter is 3 letters forward of the previous letter.

$$\begin{tikzcd}
\overset{1}{A} \arrow[r, "+3"] & \overset{4}{D} \arrow[d, "+3"] \\
\underset{10}{\boxed{J}} & \underset{7}{G} \arrow[l, "+3"]
\end{tikzcd}$$

So, missing alphabet/ character is J.

2. (*c*) According to the English alphabet,

As, $\overset{2}{B}\xrightarrow{+8}\overset{10}{J}$ and $\overset{8}{H}\xrightarrow{+8}\overset{16}{P}$

Similarly, $\overset{12}{L}\xrightarrow{+8}\overset{20}{T}$

So, missing character is T.

3. (*a*) LO, CX, GT and FU are pair of opposite letters. Similarly, the letter opposite to H is S.

Hence, option (a) is the correct answer.

4. (*c*) Starting from A in clockwise direction, add 2 in each letter to obtain the next letter.

As, $A+2=C$
$C+2=E$
$E+2=G$
$G+2=I$
$I+2=K$
$K+2=M$
Similarly, $M+2=\boxed{O}$

Hence, option (c) is the correct answer.

5. (*b*) Each letter has been denoted by its position in English alphabet.

As, position of S in English alphabet = 19
and position of X in English alphabet = 24
Similarly, position of Q in English alphabet = $\boxed{17}$

6. (*d*) In each box, letters of English alphabet and their corresponding positions are given.

As, position of B in alphabetical series is 2,
Position of J in alphabetical series is 10,
Position of Q in alphabetical series is 17,
Similarly, position of E in alphabetical series is 5 and letter H is present at 8th position in alphabetical series.

∴ Number = 5
Letter = $\boxed{H}$

7. (*c*) The vowels zigzag from top to bottom and the numbers are their respective positions in the backward order of alphabet, *i.e.*, $Z=1, Y=2, X=3$ and so on.

Then, $A=26, E=22, I=18, O=12$ and $U=6$

$$\therefore \quad \frac{?}{?}=\boxed{\frac{U}{6}}$$

8. (*b*) The letters move from numerator to denominator and have gaps of 1, 2, 3, 4 and 5 letters. The numbers are their respective position numbers in backward order.

$$\therefore \quad \frac{?}{?}=\boxed{\frac{4}{W}}$$

9. (*c*) In each figure, the letter moves from numerator to denominator with a gap of 1 letter. Its corresponding position is also present.

$$\therefore \quad \frac{?}{?}=\boxed{\frac{X}{24}}$$

10. (*c*) The numerical sequence is formed by the squares of 1, 2, 3 and 4. The numbers also mark the position of the letters A, D, I and P in the alphabetical series. These numbers and letters are present in zigzag pattern.

$$\therefore \quad \frac{?}{?}=\boxed{\frac{P}{16}}$$

11. (*a*) The pattern is as follows

$$\begin{tikzcd} \overset{23}{W} \arrow[d, "-3"] \\ \overset{20}{T} \arrow[d, "-3"] \\ \overset{17}{Q} \arrow[d, "-3"] \\ \overset{14}{N} \arrow[r, "-3"] & \overset{11}{K} \arrow[r, "-3"] & \overset{8}{\boxed{H}} \arrow[r, "-3"] & \overset{5}{E} \arrow[r, "-3"] & \overset{2}{B} \end{tikzcd}$$

Hence, option (a) is the correct answer

12. (*a*) Moving columnwise, we have

$$D\xrightarrow{+2}F\xrightarrow{+2}H \quad \text{and} \quad M\xrightarrow{+3}P\xrightarrow{+3}S$$

Similarly, $V\xrightarrow{+4}Z\xrightarrow{+4}\boxed{D}$

So, missing character is D.

13. (*d*) Moving clockwise, the pattern is as follows

$$\overset{2}{B}\xrightarrow{+1}\overset{3}{C}\xrightarrow{+2}\overset{5}{E}\xrightarrow{+3}\overset{8}{H}\xrightarrow{+4}$$
$$\overset{12}{L}\xrightarrow{+5}\overset{17}{Q}\xrightarrow{+6}\overset{23}{W}\xrightarrow{+7}\overset{4}{\boxed{D}}$$

∴ So, missing character is D.

14. (*a*) As, $\overset{1}{A}\xrightarrow{+3}\overset{4}{D}\xrightarrow{+4}\overset{8}{H}$

and $\overset{6}{F}\xrightarrow{+3}\overset{9}{I}\xrightarrow{+4}\overset{13}{M}$

Similarly, $\overset{11}{\boxed{K}}\xrightarrow{+3}\overset{14}{N}\xrightarrow{+4}\overset{18}{R}$

Hence, option (a) is the correct answer.

15. (*c*) Here, $H=8,\ B=2$ and $8\times 2=16=P$

Similarly, $C=3,\ F=6$ and $3\times 6=18=R$

Now, in column III,

$E=5$ and $T=20$

$\therefore$? = D such that

$$\underset{\overset{\downarrow}{\boxed{D}}}{4}\times 5=20$$

16. (*b*) Here, 6 9 15
F + I = O

Similarly, 1 10 11
A + J = K

∴ 5 13 18
E + M = $\boxed{R}$

Hence, option (b) is the correct answer.

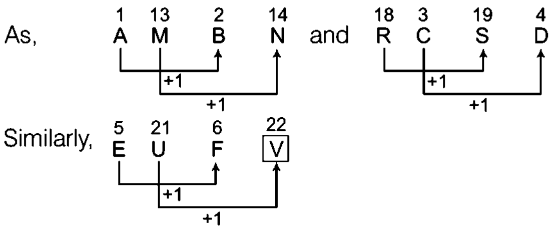
17. (*b*) In each cell, pair of opposite letters is given.

$\therefore \quad G\xrightarrow{+1}H$

and opposite letter of H is S.

∴ HS will come in place of question mark.

18. (*d*) Consecutive letters occupy alternate positions in each row.



Hence, V will come in place of question mark.

19. (*d*) The pattern in the question is

Top part = KL (MN) OP

Bottom part = DE (FG) $\boxed{H}$ I

∴ H will come in place of question mark.

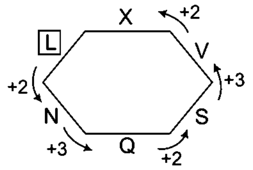
20. (*c*) There are four opposite letter pairs in the question and their sum is equal to 27. Pairs are as follows.

AZ, DW, H ? and KP

∵ Letter opposite to H is $\boxed{S}$

Hence, S will come in place of question mark.

21. (*c*) In the given question, first skip one letter, then two letters to form the series in anti-clockwise direction.



As, Q − N = 3

Similarly, N − 2 = $\boxed{L}$

∴ Hence, L will come in place of question mark.

22. (*c*) In the given question, the letters zigzag from top to bottom and bottom to top with a gap of one letter each time.

Hence, I will come in place of question mark.

23. (*d*) The gaps between the top and bottom letters in each domino form the series 4, 6, 8, 10. The final gap will therefore be 10.

∵ ? = E + 10

∴ ? = $\boxed{O}$

24. (*b*) The letters in the upper half of square have their corresponding position numbers in the second half (bottom) of square.

∴ ? = 13 = $\boxed{M}$

25. (*b*) The letters zigzag from top to bottom and have gaps of + 1, + 2, + 3, + 4 and + 5. The numbers are their respective position numbers in backward order.

$$\because \quad R\ \underbrace{S, T, U, V, W}_{\text{5 letters}}\ X$$

And position of X in backward order is 3.

$$\therefore \quad \frac{?}{\boxed{?}}=\frac{\boxed{3}}{\boxed{X}}$$

26. (*c*) The letters in the upper half of the circle follow the sequence P (QR) S (TU) V (WX) Y and the numbers represent their respective positions in backward order.

∴ ? = $\boxed{2}$

27. (*d*) According to the English alphabet,

$$\left|\begin{array}{l} (1+26)-(3+24)=0 \\ \ A \quad Z \qquad C \quad X \end{array}\right|$$

(letter X is at 24th position in English alphabet)

$\therefore \quad ? = \text{X}$

28. (*b*) As, $\left|\begin{array}{ccc} 16- & 3= & 13 \\ \text{P} & \text{C} & \text{M} \end{array}\right|$

and $\left|\begin{array}{ccc} 26- & 12= & 14 \\ \text{Z} & \text{L} & \text{N} \end{array}\right|$

Similarly, $\left|\begin{array}{ccc} 20- & 17= & 3 \\ \text{T} & \text{Q} & \text{C} \end{array}\right|$

$\therefore\ ? = \boxed{\text{C}}$ (letter at 3rd position in the English alphabet).

29. (*d*) Sum of the letter positions is multiplied by 5.

As, $\left|\begin{array}{l} (20+6)\times 5 = 130 \\ \ \ \text{T}\quad \text{F} \end{array}\right|$

Similarly, $\left|\begin{array}{l} (12+2)\times 5 = \boxed{70} \\ \ \ \text{L}\quad \text{B} \end{array}\right|$

$\therefore \quad ? = \boxed{70}$

30. (*d*) Letter position of 1st letter is divided by letter position of 2nd letter.

$\left|\begin{array}{l} 12\div 4 = 3 \\ \text{L}\quad \text{D} \end{array}\right| \quad \left|\begin{array}{l} 9\div 3 = 3 \\ \text{I}\quad \text{C} \end{array}\right| \quad \left|\begin{array}{l} 15\div 5 = 3 \\ \text{O}\quad \text{E} \end{array}\right|$

Similarly, $\left|\begin{array}{l} 26\div 2 = 13 \\ \text{Z}\quad \text{B} \end{array}\right|$

$\therefore \quad ? = 13$

31. (*a*) Number $= \dfrac{\text{Product of letter positions}}{2}$.

As, $\left|\begin{array}{l} (3\times 14)\div 2 = 21 \\ \text{C}\quad \text{N} \end{array}\right|, \left|\begin{array}{l} (20\times 22)\div 2 = 220 \\ \text{T}\quad\ \ \text{V} \end{array}\right|$

and $\left|\begin{array}{l} (6\times 11)\div 2 = 33 \\ \text{F}\quad \text{K} \end{array}\right|$

Similarly, $\left|\begin{array}{l} (12\times 9)\div 2 = 54 \\ \text{L}\quad \text{I} \end{array}\right|$

$\therefore \quad ? = \boxed{54}$

32. (*a*) In each row, each of the letters A, B, C must appear once. In each column, the product of the first and third number is equal to the second number.

$\therefore$ Missing number $= (8\times 2) = \boxed{16}$

and missing letter $= \boxed{\text{C}}$

$\therefore \quad ? = \boxed{16\ \text{C}}$

Hence, option (a) is the correct answer.

33. (*c*) Given numbers are sum of the given letters' positions.

As, $2+3=5$,
B C
$20+18=38$
T R
and $12+7=19$
L G

Similarly, $24+14=\boxed{38}$
X N

Hence, option (c) is the correct answer.

34. (*d*) As, $3\times 6\times 14\times 20 = 5040$
C F N T

Similarly, $7\times 11\times 4\times 16 = \boxed{4928}$
G K D P

Hence, 4928 will come in place of question mark.

35. (*b*) The positional values of the letters in each row are incremented by 2 to get the next letter.

Hence, missing letter $= \overset{9}{\text{I}} \xrightarrow{+2} \overset{11}{\boxed{\text{K}}}$

In each row, 1st number + 2nd number = 3rd number

$\therefore$ Missing number $= 3+5 = \boxed{8}$

$\therefore \quad ? = \boxed{\text{K}\ 8}$

Hence, option (b) is the correct answer.

36. (*b*) Starting from letter A in clockwise direction,

$\text{A} \xrightarrow{+2} \text{C} \xrightarrow{+2} \text{E} \xrightarrow{+2} \text{G} \xrightarrow{+2} \text{I} \xrightarrow{+2} \text{K} \xrightarrow{+2} \text{M} \xrightarrow{+2} \boxed{\text{O}}$

Starting from number 8 in anti-clockwise direction (prime number addition sequence)

$8 \xrightarrow{+3} 11 \xrightarrow{+5} 16 \xrightarrow{+7} 23 \xrightarrow{+11} 34 \xrightarrow{+13} 47 \xrightarrow{+17} 64 \xrightarrow{+19} \boxed{83}$

$\therefore\ ? = \boxed{\text{O and } 83}$

Hence, option (b) is the correct answer.

37. (*b*) Starting from letter A in anti-clockwise direction,

$\text{A} \xrightarrow{+2} \text{C} \xrightarrow{+3} \text{F} \xrightarrow{+4} \text{J} \xrightarrow{+5} \text{O} \xrightarrow{+6} \boxed{\text{U}}$

Starting from number 4 in anti-clockwise direction

$2^2 = 4, 3^2 = 9, 4^2 = 16, 5^2 = 25, 6^2 = \boxed{36}$

$\therefore\ ? = \boxed{\text{U and } 36}$

Hence, option (b) is the correct answer.

38. (*c*) The letters form a repetitive sequence of vowels.

A, E, I, O, U, A, $\boxed{\text{E}}$ (outer side)

On the inner side, (right half part)

$(7-3)^3 = 64$ and $(8-2)^3 = 216$

On inner side (left half part) $(5-4)^3 = 1$

and $(11-8)^3 = \boxed{27}$

$\therefore\ ? = \boxed{\text{E and } 27}$

Hence, option (c) is the correct answer.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-45) In each of the following questions, which character when placed at the sign of interrogation (?) shall complete the given pattern.

1.

25	17	41
32	83	11
26	?	31

(a) 26 (b) 25
(c) 34 (d) 38

2.

2	24	48
3	9	27
4	?	40

[SSC (10+2) 2013]

(a) 10 (b) 16
(c) 12 (d) 32

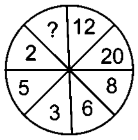
3.

81	36	25
49	100	36
9	64	16
139	200	?

[SSS (10+2) 2013]

(a) 107 (b) 77
(c) 27 (d) 50

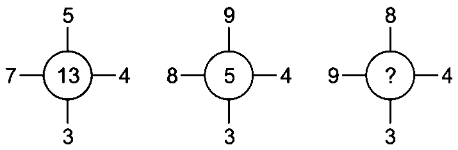
4.



[CG PSC 2013]

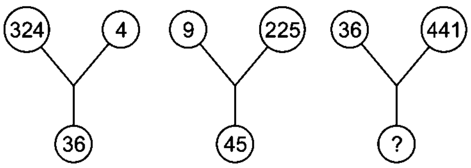
(a) 24 (b) 6
(c) 18 (d) 10
(e) 16

5.


5
7
13
4
3
9
8
5
4
3
8
9
?
4
3

(a) 12 (b) 15
(c) 18 (d) 14

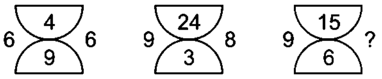
6.


324
4
36
9
225
45
36
441
?

[SSC (CPO) 2008]

(a) 180 (b) 59 (c) 126 (d) 88

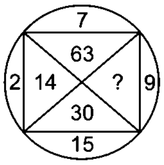
7.


4
6
6
9
24
9
8
3
15
9
?
6

[SSC (10 + 2) 2004]

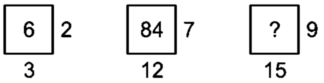
(a) 8 (b) 7 (c) 10 (d) 12

8.


7
63
2
14
?
9
30
15

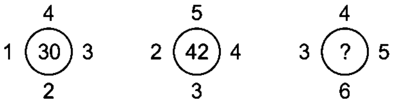
(a) 33 (b) 145 (c) 135 (d) 18

9.


6
2
3
84
7
12
?
9
15

(a) 135 (b) 167 (c) 221 (d) 141

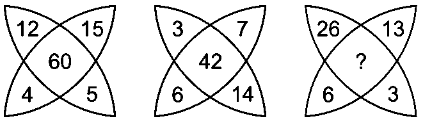
10.


4
1
30
3
2
5
2
42
4
3
4
3
?
5
6

[UP B.Ed. 2008]

(a) 54 (b) 45 (c) 35 (d) 53

11.

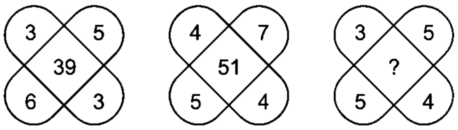

12
15
60
4
5
3
7
42
6
14
26
13
?
6
3

[SSC (CPO) 2007]

(a) 19 (b) 29
(c) 78 (d) 48

Master Exercise

12.

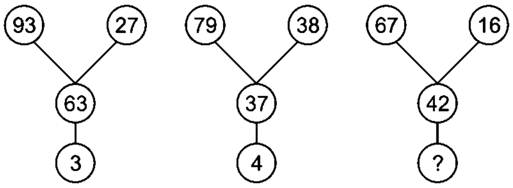


3
5
39
6
3
4
7
51
5
4
3
5
?
5
4

[SSC (CGL) 2007]

(a) 35 (b) 37 (c) 45 (d) 47

13.



93
27
63
3
79
38
37
4
67
16
42
?

[SSC (Multitasking) 2013]

(a) 5 (b) 6 (c) 8 (d) 9

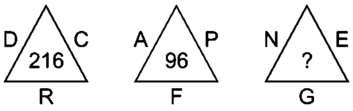
14.

D	T	24
N	E	19
L	?	14

[IIFT 2008]

(a) M
(b) B
(c) S
(d) W

15.

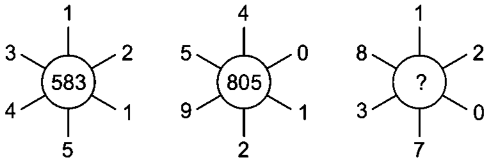


D
C
216
R
A
P
96
F
N
E
?
G

[UP B.Ed. 2012]

(a) 835
(b) 88
(c) 490
(d) 75

16.

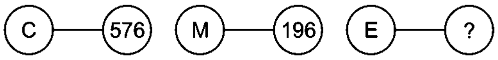


1
3
2
583
4
1
5
4
5
0
805
9
1
2
1
8
2
?
3
0
7

[SSC (10+2) 2008]

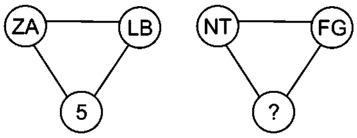
(a) 760 (b) 425 (c) 875 (d) 303

17.



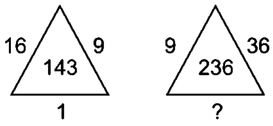
(a) 484
(b) 540
(c) 465
(d) 924

18.



(a) 15 (b) 2 (c) 17 (d) 8

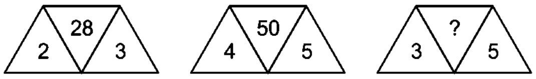
19.



16
9
143
1
9
36
236
?

(a) 38
(b) 64
(c) 4
(d) 16

20.

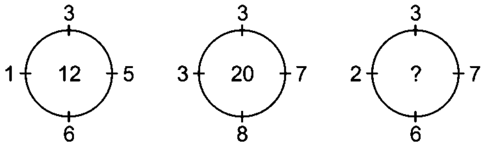


28
2
3
50
4
5
?
3
5

[SSC (CGL) 2004]

(a) 35
(b) 40
(c) 49
(d) 53

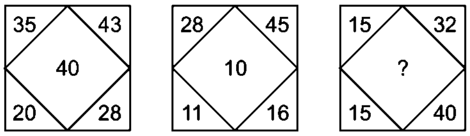
21.



3
1
12
5
6
3
3
20
7
8
3
2
?
7
6

(a) 10
(b) 15
(c) 20
(d) 25

22.

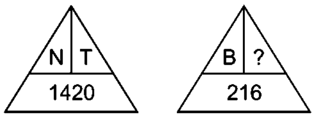


35
43
40
20
28
28
45
10
11
16
15
32
?
15
40

[SSC (DEO) 2007]

(a) 25 (b) 28 (c) 35 (d) 38

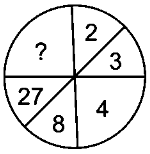
23.



N
T
1420
B
?
216

(a) P (b) H (c) M (d) L

24.



[SSC (CGL) 2013]

(a) 56
(b) 49
(c) 45
(d) 64

25.

24	20	37
31	25	?
26	36	19

[SSC (CGL) April 2014]

(a) 23
(b) 26
(c) 30
(d) 25

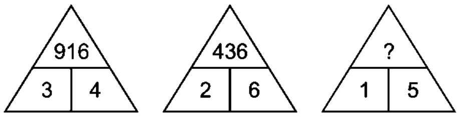
26.

6	5	4
7	6	5
5	7	6
37	23	?

[SSC (CGL) April 2014]

(a) 14 (b) 10 (c) 12 (d) 13

27.



916
3
4
436
2
6
?
1
5

[SSC (10 + 2) 2008]

(a) 625
(b) 255
(c) 225
(d) 125

28.

16	25	9
36	64	81
10	13	?

[SSC (CGL) 2013]

(a) 14 (b) 11
(c) 12 (d) 13

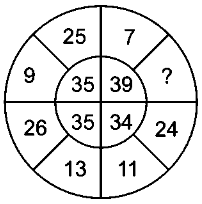
29.

4	3	6
2	5	4
3	7	?
24	105	120

[SNAP 2009]

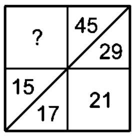
(a) 5 (b) 4
(c) 6 (d) 7

30.


25
7
9
35
39
?
26
35
34
24
13
11

(a) 28 (b) 36
(c) 81 (d) 49

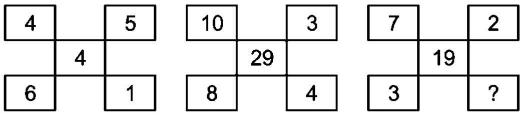
31.


?
45
29
15
17
21

[SSC (CGL) 2007]

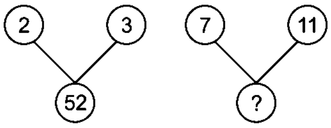
(a) 8 (b) 10
(c) 14 (d) 16

32.


4
5
4
6
1
10
3
29
8
4
7
2
19
3
?

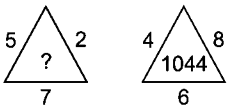
(a) 4 (b) 5
(c) 1 (d) 3

33.



(a) 99 (b) 680
(c) 77 (d) 425

34.


5
2
?
7
4
8
1044
6

(a) 1678 (b) 415
(c) 8210 (d) 702

35.

?	13	49
9	17	69
13	11	59

[SSC (Constable) 2005]

(a) 9 (b) 5 (c) 10 (d) 21

36.

1	2	3
11	7	5
120	45	?

[SSC (10 + 2) 2006]

(a) 15 (b) 16
(c) 17 (d) 18

37.

11	6	8
17	12	?
25	34	19
19	28	11

(a) 13 (b) 15
(c) 16 (d) 9

38.

1	3	7
5	12	14
25	?	28
125	192	56

[SSC (DEO) 2011]

(a) 40 (b) 48 (c) 56 (d) 64

39.

14	28	42
2	4	6
36	112	246
18	56	?

[SSC (10 + 2) 2007]

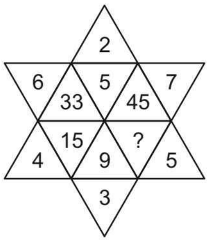
(a) 120 (b) 201 (c) 123 (d) 303

40.

4	5	3	2	0
7	3	4	4	21
6	4	4	5	22
9	6	5	5	?

(a) 34 (b) 42 (c) 44 (d) 45

41.


2
6
5
7
33
45
15
?
4
9
5
3

[SSC (CGL) 2008]

(a) 20 (b) 23 (c) 25 (d) 28

42.

K7	L4	M10
L8	M5	K12
M9	L6	?

[SSC (CPO) 2005]

(a) K24 (b) L14
(c) K14 (d) M14

43.

AC$_{4}$	BD$_{6}$	EG$_{12}$
HJ$_{18}$	KM$_{29}$	?
QS$_{36}$	TV$_{38}$	WY$_{76}$

(a) NP$_{24}$ (b) OQ$_{40}$
(c) NP$_{49}$ (d) PQ$_{68}$

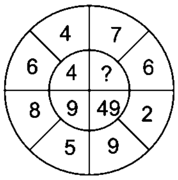
44.

DL	10	14	FR
RX	23	18	SM
KM	?	?	PV

[MAT 2011]

(a) 18, 34
(b) 14, 21
(c) 56, 84
(d) 12, 18

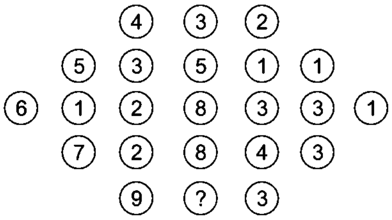
45.


4
7
6
6
4
?
8
9
49
2
5
9

(a) 1
(b) 3
(c) 64
(d) 121

Directions (Q. Nos. 46-50) In each of the following questions, which number when placed at the sign of interrogation shall complete the given pattern.

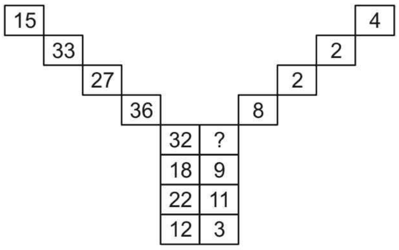
46.


4 3 2
5 3 5 1 1
6 1 2 8 3 3 1
7 2 8 4 3
9 ? 3

[IIFT 2011]

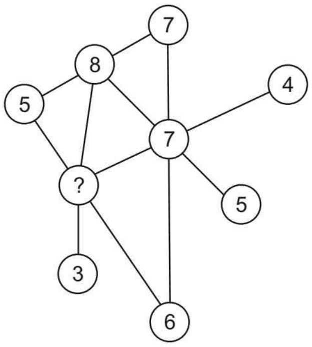
(a) 1
(b) 4
(c) 12
(d) 6

47.


15
33
27
36
32
?
18
9
22
11
12
3
8
2
2
4

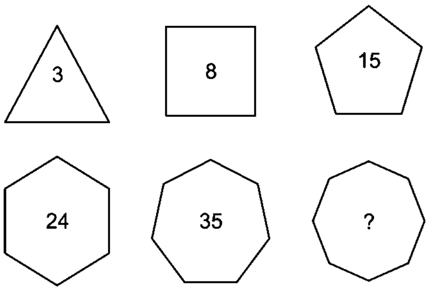
(a) 3 (b) 4
(c) 8 (d) 12

48.



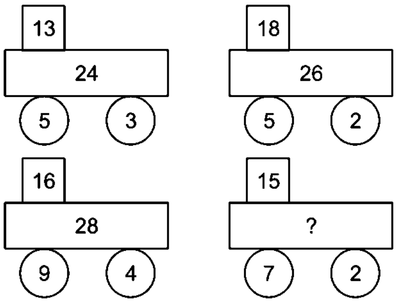
(a) 8 (b) 9
(c) 7 (d) 5

49.



(a) 40 (b) 42
(c) 46 (d) 48

50.


13
24
5
3
18
26
5
2
16
28
9
4
15
?
7
2

(a) 18 (b) 22
(c) 16 (d) 27

Directions (Q. Nos. 51-57) In each of the following questions, choose the missing terms out of the given alternatives.

51.

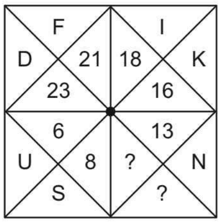
29		
16	13	
27	9	33

38		
21	17	
35	16	43

55		
30	25	
?	?	?

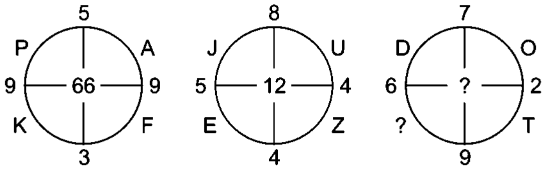
(a) 65, 36, 63 (b) 53, 24, 63
(c) 49, 32, 53 (d) 51, 25, 61

52.


F
I
D
21
18
K
23
16
6
13
U
8
?
N
S
?

(a) 9/R (b) 11/P
(c) 13/Q (d) 10/V

53.


5
P
A
9
66
9
K
F
3
8
J
U
5
12
4
E
Z
4
7
D
O
6
?
2
?
T
9

(a) 53 and Z (b) 51 and Y (c) 50 and Y (d) 52 and U

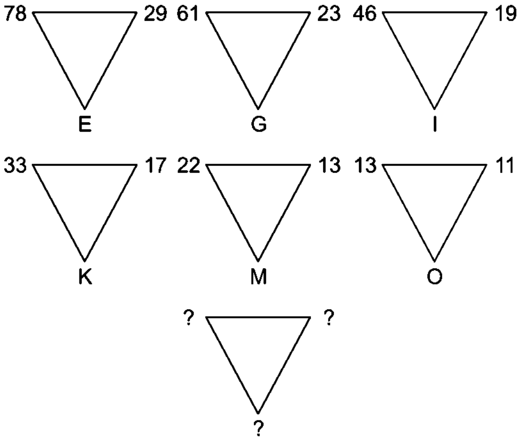
54.

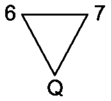
2	9	11	7
8	5	13	– 3
7	?	10	– 4
6	4	10	?

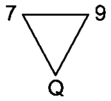
[SSC (CGL) 2013]

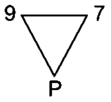
(a) 3 and (– 2)
(b) (– 3) and (– 2)
(c) 3 and 2
(d) (– 3) and 2

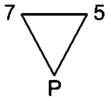
55.


78
29
E
61
23
G
46
19
I
33
17
K
22
13
M
13
11
O
?
?
?

(a)


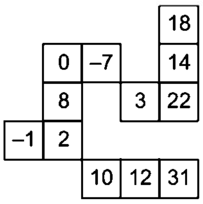
(b)


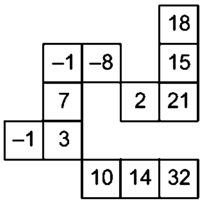
(c)


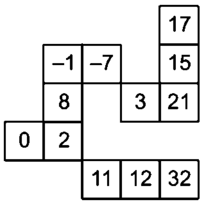
(d)


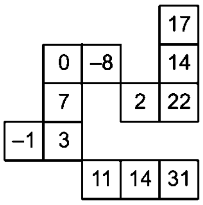
56.

1	4	–3	–1	?
–3	?	?	–5	?
5	?	1	?	?
?	?	–5	–3	16
14	17	?	?	?

(a)

18
0
–7
14
8
3
22
–1
2
10
12
31

(b)

18
–1
–8
15
7
2
21
–1
3
10
14
32

(c)

17
–1
–7
15
8
3
21
0
2
11
12
32

(d)

17
0
–8
14
7
2
22
–1
3
11
14
31

57.

7	51	2
6	40	4
5	28	?

[UP PSC 2014]

(a) 1
(b) 3
(c) 2
(d) 0

Response & Interpretations (Master Exercise)

1. (*a*) Number at the centre is the sum of numbers in the rows and columns individually.

$\therefore$ Missing number $= 83 - (31 + 26) = 26$

2. (*a*) As, $2 \times 24 = 48$

$3 \times 9 = 27$

Similarly, $4 \times \boxed{10} = 40$

So, $? = 10$

3. (*b*) As, $81 + 49 + 9 = 139$

$36 + 100 + 64 = 200$

Similarly, $25 + 36 + 16 = \boxed{77}$

So, $? = 77$

4. (*a*) In the figure, considering the diagonally opposite numbers, the larger number is 4 times the smaller number

As, $2 \times 4 = 8$

$3 \times 4 = 12$

$5 \times 4 = 20$

Similarly, $6 \times 4 = \boxed{24}$

Hence, missing number is 24.

5. (*a*) As, $(7 \times 4) - (5 \times 3) = 13$

and $(8 \times 4) - (9 \times 3) = 5$

Similarly, $(9 \times 4) - (8 \times 3) = \boxed{12}$

$\therefore$ $? = 12$

6. (*c*) As, $\sqrt{324} \times \sqrt{4} = 18 \times 2 = 36$

$\sqrt{9} \times \sqrt{225} = 3 \times 15 = 45$

Similarly, $\sqrt{36} \times \sqrt{441} = 6 \times 21 = \boxed{126}$

$\therefore$ $? = 126$

7. (*c*) As, $(4 \times 9) \div 6 = 6,$

$(24 \times 3) \div 9 = 8$

and $(15 \times 6) \div 9 = \boxed{10}$

$\therefore$ $? = 10$

8. (*c*) $15 \times 2 = 30, 2 \times 7 = 14, 7 \times 9 = 63$ and $9 \times 15 = \boxed{135}$

Hence, the missing number is 135.

9. (*a*) As, $3 \times 2 = 6$ and $12 \times 7 = 84$

Similarly, $15 \times 9 = \boxed{135}$

$\therefore$ $? = 135$

10. (*a*) As, $(1 + 4 + 3 + 2) \times 3 = 30$

and $(2 + 5 + 4 + 3) \times 3 = 42$

Similarly, $(3 + 6 + 5 + 4) \times 3 = \boxed{54}$

$\therefore$ $? = 54$

11. (*c*) As, $12 \times 5 = 15 \times 4 = 60$

and $3 \times 14 = 7 \times 6 = 42$

Similarly, $26 \times 3 = 13 \times 6 = \boxed{78}$

$\therefore$ $? = 78$

12. (*b*) As, $39 = (3 \times 3) + (6 \times 5)$

and $51 = (4 \times 4) + (5 \times 7)$

Similarly, $(4 \times 3) + (5 \times 5) = \boxed{37}$

$\therefore$ $? = 37$

13. (*d*) As, $93 - (27 + 63) = 3,$

$79 - (38 + 37) = 4$

Similarly, $67 - (16 + 42) = \boxed{9}$

Hence, number 9 will come in place of question mark.

14. (*b*) Letters' positions are added to get the numbers in rows.

As, $\left|\begin{array}{ccccc} 4 & + & 20 & = & 24 \\ \text{D} & & \text{T} & & \end{array}\right|$ and $\left|\begin{array}{ccccc} 14 & + & 5 & = & 19 \\ \text{N} & & \text{E} & & \end{array}\right|$

Similarly, $\left|\begin{array}{ccccc} 12 & + & x & = & 14 \\ \text{L} & & ? & & \end{array}\right|$

$12 + x = 14 \Rightarrow x = 14 - 12 = 2$

$\therefore$ $? = \boxed{\text{B}}$

15. (*c*) Numbers inside the triangles are products of alphabetical positions of letters existing along the sides of triangles.

As, $\left|\begin{array}{ccccccc} 4 & \times & 3 & \times & 18 & = & 216 \\ \text{D} & & \text{C} & & \text{R} & & \end{array}\right|$

and $\left|\begin{array}{ccccccc} 1 & \times & 16 & \times & 6 & = & 96 \\ \text{A} & & \text{P} & & \text{F} & & \end{array}\right|$

Similarly, $\left|\begin{array}{ccccccc} 14 & \times & 5 & \times & 7 & = & 490 \\ \text{N} & & \text{E} & & \text{G} & & \end{array}\right|$

$\therefore$ $? = \boxed{490}$

16. (*a*) As, $\left.\begin{array}{r} 1 \times 5 = 5 \\ 2 \times 4 = 8 \\ 1 \times 3 = 3 \end{array}\right\} = 583$ and $\left.\begin{array}{r} 4 \times 2 = 8 \\ 0 \times 9 = 0 \\ 1 \times 5 = 5 \end{array}\right\} = 805$

Similarly, $\left.\begin{array}{r} 1 \times 7 = 7 \\ 2 \times 3 = 6 \\ 0 \times 8 = 0 \end{array}\right\} = 760$

$\therefore$ $? = \boxed{760}$

17. (*a*) Here, each letter is represented by the square of its opposite letters position.

As, $\left|\begin{array}{ll} 3 + 24 = 27 & \therefore\ 24^2 = 576 \\ \text{C} & \end{array}\right|$

and $\left|\begin{array}{ll} 13 + 14 = 27 & \therefore\ 14^2 = 196 \\ \text{M} & \end{array}\right|$

Similarly, $\left|\begin{array}{ll} 5 + 22 = 27 & \therefore\ 22^2 = \boxed{484} \\ \text{E} & \end{array}\right|$

$\therefore$ $? = \boxed{484}$

18. (*b*) Letter positions are added till they get converted into single digit.

As, $\left|\begin{array}{l} 26 + 1 + 12 + 2 = 41;\ 4 + 1 = 5 \\ \text{Z}\quad \text{A}\quad \text{L}\quad \text{B} \end{array}\right|$

Similarly, $\left|\begin{array}{l} 14 + 20 + 6 + 7 = 47;\ 4 + 7 = 11 \text{ and } 1 + 1 = \boxed{2} \\ \text{N}\quad \text{T}\quad \text{F}\quad \text{G} \end{array}\right|$

$\therefore$ $? = \boxed{2}$

19. (*c*) Clearly, the numbers along the sides of triangle are the squares of digits of the number at the centre.

As, $(1)^2 = 1, (4)^2 = 16, (3)^2 = 9$

Similarly, $(2)^2 = \boxed{4}, (3)^2 = 9, (6)^2 = 36$

Hence, the missing number is 4.

20. (*b*) As, $2, 3 \rightarrow 23 + 5 = 28$ and $4, 5 \rightarrow 45 + 5 = 50$

Similarly, $3, 5 \rightarrow 35 + 5 = 40$

$\therefore$ $? = \boxed{40}$

21. (*b*) As, $(5-1)\times(6-3)=12$ and $(7-3)\times(8-3)=20$

Similarly, $?=(7-2)\times(6-3)=\boxed{15}$

Hence, option (b) is the correct answer.

22. (*d*) As, $(35+20+28)-43=40$

and $(28+11+16)-45=10$

Similarly, $(15+15+40)-32=38$

$\therefore$ $?=\boxed{38}$

23. (*a*) Letters are given their positions in the English alphabet to obtain the numbers given at the bottom.

As, N T 14 20 Similarly, 2 16 B $\boxed{P}$

Hence, P is the missing character.

24. (*d*) $2, (2)^3=8,\ 3, (3)^3=27,\ 4, (4)^3=\boxed{64}$

So, the missing number is 64.

25. (*d*) As, $24+20+37=81$ and $26+36+19=81$

Similarly, $31+\boxed{25}+?=81$

$\Rightarrow$ $?=\boxed{25}$

26. (*a*) As $6\times7-5=42-5=37$ and $5\times6-7=30-7=23$

Similarly, $4\times5-6=20-6=\boxed{14}$

Hence, 14 is the missing number.

27. (*d*) As, $(3)^2, (4)^2\rightarrow916$ and $(2)^2(6)^2\rightarrow436$

Similarly, $(1)^2(5)^2\rightarrow125$

Hence, option (d) is the correct answer

28. (*c*) $\sqrt{16}+\sqrt{36}=4+6=10;$

$\sqrt{25}+\sqrt{64}=5+8=13$

Similarly, $\sqrt{9}+\sqrt{81}=?$ $\Rightarrow$ $3+9=\boxed{?}$

or $?=\boxed{12}$

29. (*a*) As, $24\div(4\times2)=3$ and $105\div(3\times5)=7$

Similarly, $120\div(6\times4)=\boxed{5}$

$\therefore$ $?=5$

30. (*a*) Here, total of the numbers is on the opposite side.

As, $26+13=39, 11+24=35$

and $25+9=34,$

Similarly, $7+?=35$

$\therefore$ $?=\boxed{28}$

31. (*c*) As, $45-16=29, 29-8=21, 21-4=17, 17-2=15$

Similarly, $15-1=\boxed{14}$

$\therefore$ $?=\boxed{14}$

32. (*b*) $\{(4)^2+(5)^2\}-\{(6)^2+(1)^2\}=4$

$\{(10)^2+(3)^2\}-\{(8)^2+(4)^2\}=29$

$\{(7)^2+(2)^2\}-\{(3)^2+\boxed{5}^2\}=19$

So, the missing number is 5.

33. (*b*) As, $(2^2+3^2)\times4=52$

Similarly, $(7^2+11^2)\times4=\boxed{680}$

$\therefore$ $?=\boxed{680}$

34. (*d*) As, $(4^2+8^2+6^2)\times9=1044$

Similarly, $(5^2+2^2+7^2)\times9=\boxed{702}$

$\therefore$ $?=\boxed{702}$

35. (*b*) Number in 3rd column = 2 × 1st block number + 3 × 2nd block number.

As, $(2\times13)+(3\times11)=59$

and $(2\times9)+(3\times17)=69$

Similarly, $(2\times\boxed{5})+(3\times13)=49$

Hence, the missing number is 5.

36. (*b*) Across each column,

Number is 3rd cell = $(\text{Number in 2nd cell})^2 - (\text{Number in 1st cell})^2$

$(11)^2-(1)^2=120$

$(7)^2-(2)^2=45$

Similarly, $(5)^2-(3)^2=\boxed{16}$

Hence, the missing number is 16.

37. (*c*) As, $(11+25)-17=36-17=19$

and $(6+34)-12=40-12=28$

Similarly, $(8+19)-?=11$

$?=27-11$

$\Rightarrow$ $?=\boxed{16}$

38. (*b*) In the first column, each number is multiplied by 5 to get the next number

i.e., $1\times5=5$

$5\times5=25$

$25\times5=125.$

Similarly, in 2nd column each number is multiplied by 4 to get the next number

i.e., $3\times4=12, 12\times4=\boxed{48}$

and $48\times4=192.$

Hence, the missing number is 48.

39. (*c*) Number in 1st row = 7 × Number in 2nd row.

Number in the 3rd row = 2 × Number in the 4th row.

Hence, the missing number is $\boxed{123}$.

40. (*a*) As, $4\times2-(5+3)=0$

$7\times4-(3+4)=21$

$6\times5-(4+4)=22$

Similarly, $9\times5-(6+5)=\boxed{34}$

Hence, option (a) is the correct answer.

41. (*b*) $7\times(7-1)=42\rightarrow42+3=45$

$2\times(2-1)=2\rightarrow2+3=5$

$6\times(6-1)=30\rightarrow30+3=33$

$4\times(4-1)=12\rightarrow12+3=15$

$3\times(3-1)=6\rightarrow6+3=9$

$\therefore$ $5\times(5-1)=20\rightarrow20+3=\boxed{23}$

Hence, option (b) is the correct answer.

42. (*c*) Each row consists of letters K, L and M. The difference in numeric portion of 3rd column is 2.

Hence, the missing term is $\boxed{\text{K 14}}$.

43. (*c*) Each block comprises of two letters and a number. Letters occur in pairs with a gap of one letter in between. The 1st letter of 3rd block in each row is the letter next to the 2nd alphabet of 2nd block. Number in 3rd block of each row is 2 more than the sum of 1st and 2nd block numbers.

Hence, $\boxed{\text{NP}_{49}}$ is the correct answer.

44. (*b*) As,
$$\begin{matrix} D & & L \\ \downarrow & & \downarrow \\ 4 & + & 12 \end{matrix} = 16;\ \frac{16}{2} = 8 \text{ and } 8 + 2 = 10$$

It means, place number of letters are added and divided by 2, and the result thus obtained, is incremented by 2.

Similarly,
$$\begin{matrix} K & & M \\ \downarrow & & \downarrow \\ 11 & + & 13 \end{matrix} = 24;\ \frac{24}{2} = 12 \text{ and } 12 + 2 = 14$$
$$\begin{matrix} P & & V \\ \downarrow & & \downarrow \\ 16 & + & 22 \end{matrix} = 39;\ \frac{38}{2} = 19 \text{ and } 19 + 2 = 21$$

Hence, missing numbers are 14 and 21.

45. (*a*) As,
$$(6-4)^2 = 2^2 = 4$$
$$(8-5)^2 = 3^2 = 9$$
$$(9-2)^2 = 7^2 = 49$$

Similarly, $(7-6)^2 \Rightarrow 1^2 \Rightarrow \boxed{1}$

Hence, option (a) is the correct answer.

46. (*d*) Starting with the top most row, the number at the center of each row is the sum of the other numbers divided by 2

1st row → $(4 + 2) \div 2 = 3$
2nd row → $(5 + 3 + 1 + 1) \div 2 = 5$
3rd row → $(6 + 1 + 2 + 3 + 3 + 1) \div 2 = 8$
4th row → $(7 + 2 + 4 + 3) \div 2 = 8$
5th row → $(9 + 3) \div 2 = \boxed{6}$
$\therefore$? = 6

47. (*b*) The top left hand number is obtained by adding the bottom two numbers. The top right hand number is the result of dividing the bottom two numbers.

Thus, $12 + 3 = 15,\ 12 \div 3 = 4,$
$22 + 11 = 33,\ 22 \div 11 = 2,$
$18 + 9 = 27,\ 18 \div 9 = 2,$
So, $32 + X = 36$ and $32 \div X = 8$ or $X = \boxed{4}$

48. (*b*) Each connected straight line of three numbers totals 20.

$\therefore$ $4 + 7 + ? = 20$
$? = 20 - 11$
$? = \boxed{9}$

49. (*d*) Each number is the product of the number of sides in the shape enclosing it and its position in the sequence. Since the octagon has 8 sides and is 6th in the sequence, the number inside it should be $8 \times 6 = \boxed{48}$.

$\therefore$? = 48

50. (*c*) Here, the pattern is as follows

(Smokestack – Left wheel) x Right wheel = Body

As, $(13-5) \times 3 = 8 \times 3 = 24$
$(18-5) \times 2 = 13 \times 2 = 26$
and $(16-9) \times 4 = 7 \times 4 = 28$
Similarly, $(15-7) \times 2 = 8 \times 2 = \boxed{16}$
$\therefore$? = 16

51. (*d*) Here, the pattern is

	a	
b	c	
$(2\times c)+1$	$(b-c)^2$	$(2\times b)+1$

$\therefore$ First number $= (25 \times 2) + 1 = 51$
Second number $= (30 - 25)^2 = 25$
and third number $= (30 \times 2) + 1 = \boxed{61}$
Hence, 51, 25, 61 are the three missing terms.

52. (*b*) The letters progress in clockwise direction starting from D and the next letter is obtained by following the below skipping pattern

D (E) F (GH) I (J) K (LM) N (O) $\boxed{P}$ (QR) S (T) U. The numbers are their respective positions in backward order.

$$\therefore \frac{?}{?} = \frac{11}{P}$$

53. (*b*) The pattern is $9 \times 9 - 5 \times 3 = 66$
$8 \times 4 - 5 \times 4 = 12$
$9 \times 7 - 6 \times 2 = \boxed{51}$

$$A \xrightarrow{+5} F \xrightarrow{+5} K \xrightarrow{+5} P \xrightarrow{+5} U \xrightarrow{+5} Z \xrightarrow{+5}$$
$$E \xrightarrow{+5} J \xrightarrow{+5} O \xrightarrow{+5} T \xrightarrow{+5} \boxed{Y} \xrightarrow{+5} D$$

Hence, 51 and Y are the correct answer

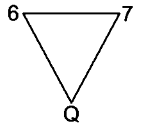
54. (*a*) $2 + 9 = 11$
$9 - 2 = 7$
Also, $8 + 5 = 13$
$5 - 8 = -3$
Now, $7 + ? = 10$
$? = 10 - 7 = \boxed{3}$
Also, $4 - 6 = ?$
$? = \boxed{-2}$

So, the correct options are 3 and (-2).

55. (*a*) The numbers at the top left corners decrease by 17, then 15, then 13, etc. The numbers at the top right corners are consecutive primes in descending order. The letters move two letters forward each time.

i.e., $E \xrightarrow{+2} G \xrightarrow{+2} I \xrightarrow{+2} K \xrightarrow{+2} M \xrightarrow{+2} O \xrightarrow{+2} \boxed{Q}$

So, the correct answer is



56. (*a*) In rows, the pattern is +3, −7, + 2, + 19

In columns, the pattern is −4, + 8, − 6, + 15

So, the correct answer is as given in option (a).

57. (*b*) As, $7^2 + 2 = 49 + 2 = 51$
$6^2 + 4 = 36 + 4 = 40$
Similarly, $5^2 + ? = 28$
$\therefore$? = 3

8

Ranking and Time Sequence Test

This chapter broadly deals with the problems related to the arrangement of persons/objects is ascending/descending order (based on different parameters like height, weight, merit, position etc.), determining the position of a person/object in a row/queue and the problems related to the time sequence test wherein the candidate has to find out a particular day based on some given conditions.

Different types of questions covered in this chapter are as follows

- Sequential Order of Arrangement
- Position Test
- Time Sequence Test

Several types of problems based on this section that are asked in various competitive exams are classified as follows

Type 1 Sequential Order of Arrangement

Ranking

Ranking involves determining the sequential ordering of two or more persons/things based on the comparison of parameters such as age, height, marks, salary, weight, length, size etc.

Questions based on ranking are generally given with a set of information in jumbled form, based on which the candidates are required to systematically arrange the given information and determine the sequential order of arrangement of the various persons/objects.

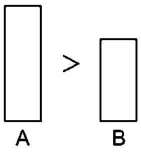
Generally, we compare the things, objects and persons using various notations such as greater than (>), smaller than (<), equal to (=), greater than or equal to (≥), less than or equal to (≤), etc. The candidates are required to understand the given constraints and conditions to provide appropriate notation of comparison to reach to the conclusion.

While solving problems, under this section, use of the following symbols is required

1. Greater/Heavier/Taller/Higher/More (>)

A > B means

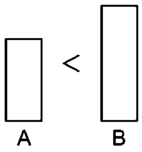
A is greater than B.



2. Smaller/Lighter/Shorter/Lower/Less (<)

A < B means

A is smaller than B.



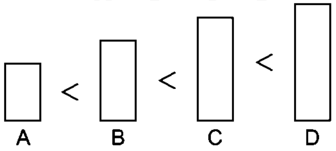
On the basis of above mentioned two symbols, following two sequences are used while solving problems.

Ascending Order Sequence

In this sequence, the persons, are arranged in ascending order of their heights, weight, ages etc.

Let us see

A < B < C < D

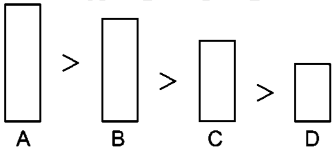


Descending Order Sequence

In this sequence, the persons are arranged in descending order of their heights, weights, ages etc.

Let us see

A > B > C > D



Comparison Based on Length or Height

In this type of questions, comparison of lengths or heights of different persons/objects is given separately. We have to arrange the data in the meaningful order and answer the related question.

The examples given below will help you to understand such the type of questions

***Ex* 1** Vinay is taller than Hansika, Hansika is taller than Abhay, Aalok is taller than Ashok and Ashok is taller than Vinay. Who is the shortest in the group?

(a) Aalok (b) Ashok (c) Hansika (d) Abhay

Sol. (*d*) Vinay > Hansika ; Hansika > Abhay

Aalok > Ashok ; Ashok > Vinay

On arranging the above data, we get

Aalok > Ashok > Vinay > Hansika > Abhay

Clearly, Abhay is the shortest.

***Ex* 2** In a group of five persons Kamal is the tallest while Lata is the shortest. Rashmi is shorter than Kamal but taller than Vandana and Prem. Prem is second shortest person in the group. Who is the third tallest? [SSC (CPO) 2010]

(a) Vandana (b) Rashmi (c) Prem (d) Lata

Sol. (*a*) Kamal → Tallest and Lata → Shortest

Kamal > Rashmi > Vandana and Prem ; Prem / 2nd shortest > Lata

On arranging the above data, we get

Kamal > Rashmi > Vandana > Prem > Lata

Clearly, Vandana is the third tallest.

Comparison Based on Age

In this type of questions, the ages of different persons are given in comparison with each other and we have to arrange this data in a logical order and answer the question (s) related to the data.

***Ex* 3** Vishal is elder than Aakash but younger than Subhi, Yaksh is younger than Deepak but elder than Aakash. If Subhi is younger than Deepak, then who is the eldest? **[PNB (PO/MT) 2009]**

(a) Aakash
(b) Vishal
(c) Subhi
(d) Deepak

Sol. (*d*) According to the question,

Subhi > Vishal > Aakash
Deepak > Yaksh > Aakash
Deepak > Subhi

On arranging the above data, we get

Deepak > Subhi > Vishal > Yaksh > Aakash

Clearly, Deepak is the eldest.

Comparison Based on Weight

In this type of questions, the weight of different persons are given in comparison with each other and we have to arrange this data in the logical order and answer the related questions.

***Ex* 4** Sunil is heavier than Abhinav but not as heavier as Rajiv. Abhinav is heavier than Jayesh. Kashi is heavier than Sunil but not as heavier as Rajiv. Who is the heaviest?

(a) Sunil
(b) Abhinav
(c) Rajiv
(d) Kashi

Sol. (c) According to the question,

Rajiv > Sunil > Abhinav
Abhinav > Jayesh
Rajiv > Kashi > Sunil

On arranging the above data, we get

Rajiv > Kashi > Sunil > Abhinav > Jayesh

Clearly, Rajiv is the heaviest.

Comparison Based on Merit

In this type of questions, persons are compared on the basis of their merit or competency or intelligence and we have to deduce the logical order of merit from the data and answer the related question (s).

***Ex* 5** Vikash is more competent than Keshav, Shiv is less competent than Aashu but more competent than Keshav. Vikash is less competent than Shiv. Who is the most competent in the group? **[BOI (PO) 2010]**

(a) Aashu
(b) Keshav
(c) Vikash
(d) Shiv

Sol. (*a*) According to the question,

Vikash > Keshav
Aashu > Shiv > Keshav
Shiv > Vikash

On arranging the above data, we get

∴ Aashu > Shiv > Vikash > Keshav

Clearly, Aashu is the most competent in the group.

Practice Corner **8.1**

Build your Confidence...

1. Seema's younger brother Sohan is older than Seeta. Sweta is younger than Deepti but elder than Seema. Who is the eldest ? **[SSC (10+2) 2013]**

(a) Seema (b) Sweta
(c) Seeta (d) Deepti

2. Anil is taller than Sunny and Sunny is shorter than Baby Anil is taller than Bose whose height is less than Sunny Baby is shorter than Anil. Who is the shortest among them? **[UP B. Ed. 2011]**

(a) Anil (b) Baby
(c) Sunny (d) Bose

3. Mukesh is taller than Suresh but shorter than Rakesh. Rakesh is taller than Harish but shorter than Amar. Who among them is the shortest?

(a) Mukesh (b) Suresh
(c) Harish (d) Cannot be determined

4. Each of P, Q, T, A and B has different heights. T is taller than P and B but shorter than A and Q. P is not the shortest, who is the tallest? **[UCO Bank (PO) 2009]**

(a) A (b) Q
(c) P (d) P or B
(e) None of these

5. A, B, C, D and E each has different heights. D is only shorter than B. E is shorter than A and C. Who is the shortest of them? **[UCO Bank (PO) 2010]**

(a) E (b) A
(c) C (d) Data inadequate
(e) None of these

6. A, B, C and D are four buildings in a residential complex. Each has different heights. A is only higher than D, B is shorter than C but higher than A. Which of the following buildings is the highest? **[Andhra Bank (Clerk) 2011]**

(a) D (b) C
(c) B (d) A
(e) None of these

7. N is more intelligent than M. M is not as intelligent as Y. X is more intelligent than Y but not as good as N. Who is the most intelligent of all? **[SSC (CGL) 2013]**

(a) N (b) M (c) X (d) Y

8. Barun is taller than Sanjay. Bipul is taller than Barun. Krishna is also not as tall as Bipul but is taller than Barun. Who is the tallest? **[SSC (10+2) 2013]**

(a) Barun (b) Bipul
(c) Krishna (d) Sanjay

9. Each of J, K, L, M and N have different heights. M is only shorter than J.K is not as tall as N and N is shorter than L. Who is the shortest of them? **[UCO Bank (Clerk) 2010]**

(a) J (b) N
(c) K (d) L
(e) None of these

Directions (Q. Nos.10-11) Answer the following questions based on the statements given below. **[CLAT 2013]**

I. There are 3 poles on each side of the road.
II. These six poles are labelled A, B, C, D, E and F.
III. The poles are different colours namely— Golden, Silver, Metallic, Black, Bronze and White.
IV. The poles are of different heights.
V. E, the tallest pole, is exactly opposite to the golden coloured pole.
VI. The shortest pole is exactly opposite to the metallic coloured pole.
VII. F, the black coloured pole, is located between A and D.
VIII. C, the bronze coloured pole, is exactly opposite to A.
IX. B, the metallic coloured pole, is exactly opposite to F.
X. A, the white coloured pole, is taller than C but shorter than D and B.

10. Which is the second tallest pole?

(a) A (b) D
(c) B (d) None of these

11. Which is the colour of the tallest pole?

(a) Golden (b) Silver
(c) Bronze (d) None of these

Directions (Q. Nos. 12-13) Read the following information given below to answer the questions that follow.

Among A, B, C and D, B is heavier than A and C but C is taller than him. D is not as tall as C while A is the shortest. C is not as heavy as A. D is heavier than B but shorter than him.

12. Who is the heaviest?

(a) B (b) A (c) D (d) C

13. Who is the tallest?

(a) D (b) C
(c) Either A or D (d) Cannot be determined

Directions (Q. Nos. 14-18) Read the following information carefully to answer the questions that follow.

I. Anita, Mahima, Rajan, Lata and Deepti are five cousins.
II. Anita is twice as old as Mahima.
III. Rajan is half the age of Mahima.
IV. Anita is half the age of Deepti.
V. Rajan is twice the age of Lata.

14. Who is the youngest?
(a) Deepti (b) Rajan
(c) Lata (d) Anita

15. Who is the eldest?
(a) Deepti (b) Lata (c) Anita (d) Rajan

16. Which of the following pairs of persons are of the same age?
(a) Mahima and Lata (b) Anita and Mahima
(c) Mahima and Rajan (d) There is no person

17. Anita is younger than whom?
(a) Rajan (b) Mahima (c) Deepti (d) Lata

18. If Mahima is 16 yr old, then what is the age of Lata?
(a) 4 yr (b) 5 yr (c) 7 yr (d) 14 yr

19. Shailendra is shorter than Keshav but taller than Rakesh, Madhav is the tallest. Aashish is a little shorter than Keshav and little taller than Shailendra. If they stand in the order of increasing heights, who will be the second? **[SSC (FCI) 2012]**
(a) Aashish (b) Shailendra (c) Rakesh (d) Madhav

20. The age of Amit is same as Sumit because they are twins, Richa is younger than Sumit, Richa is younger than Jyotsana but elder than Saurabh, Sumit is younger than Jyotsana. Who is the eldest among them? **[CMAT 2010]**
(a) Amit (b) Jyotsana (c) Richa (d) Saurabh

21. The age of Ram is twice the age of Shyam and half the age of Sohan, Shyam is elder than Mohan. Who is the eldest? **[SSC (CGL) 2011]**
(a) Mohan (b) Ram (c) Sohan (d) Shyam

22. P, Q, R and S are four males. P is the eldest in the group but he is not the poorest, R is the richest but not the eldest, Q is elder than S but he is not elder than P or R, P is richer than Q but he is not richer than S. How the four persons can be arranged in decreasing order of their age and money? **[UPSC (IAS) 2010]**
(a) PQRS, RPSQ (b) PRQS, RSPQ
(c) PRQS, RSQP (d) PRSQ, RSPQ

23. In a cricket team, Dhoni is taller than Virat but not as tall as Raina, Rohit is shorter than Dhoni but taller than Shikhar. Who among them is the shortest? **[NIFT (PG) 2014]**
(a) Dhoni (b) Virat
(c) Shikhar (d) Cannot be determined

24. Lakshmi is elder than Meenu. Leela is elder than Meenu but younger than Lakshmi. Latha is younger than both Meenu and Hari but Hari is younger than Meenu. Who is the youngest? **[SSC (10+2) 2013]**
(a) Lakshmi (b) Meenu (c) Leela (d) Latha

25. Sati is elder than Renu, Geeta is younger than Renu while Priya is elder than Sati. Who is the eldest? **[RRB (TC/CC) 2010]**
(a) Priya (b) Sati (c) Renu (d) Geeta

26. Sashi is 2 yr elder than Sunita, Sunita is 3 yr elder than Bindu, Shekhar is 1 yr elder than Bindu. Who is the youngest in the group? **[SSC (10+2) 2010]**
(a) Sashi (b) Shekhar (c) Bindu (d) Sunita

27. Priti scored more than Rahul, Yamuna scored as much as Divya. Lokita scored less than Manju. Rahul scored more than Yamuna. Manju scored less than Divya. Who scored the lowest? **[SSC (CGL) 2013]**
(a) Manju (b) Yamuna (c) Lokita (d) Rahul

28. In P, Q, R, S, T and U, R is taller than only P and U. S is shorter than only T and Q. If each has different heights, then who will be at the third place when they are standing in descending order of their height and the counting is done in the same order (tallest to shortest)? **[Syndicate Bank (Clerk) 2011]**
(a) R (b) P (c) S (d) Q
(e) None of these

29. Sita is older than Kanika. Ila is older than Kanika but younger than Sita, Shempa is younger than both Manas and Kanika, Kanika is older than Manas. Who is the youngest? **[SSC (CPO) 2013]**
(a) Shempa (b) Manas (c) Ila (d) Kanika

30. Umesh is taller than Satish, Suresh is shorter than Neeraj but taller than Umesh. Who is the tallest among them? **[SSC (CGL) 2012]**
(a) Umesh (b) Suresh (c) Satish (d) Neeraj

Directions (Q. Nos. 31-33) Study the following information carefully to answer the given questions that follow. **[IBPS (PO) 2012]**

Each of the six friends A, B, C, D, E and F scored different marks in an examination. C scored more than only A and E. D scored less than only B. E did not score the least. The one who scored the third highest marks scored 81 marks. E scored 62 marks.

31. Which of the following could possibly by C's score?
(a) 70 (b) 94 (c) 86 (d) 61
(e) 81

32. Which of the following is true with respect to the given information?
(a) D's score was definitely less than 60
(b) F scored the maximum marks
(c) Only two people scored more than C
(d) There is a possibility that B scored 79 marks
(e) None of the above is true

33. The person who scored the maximum scored 13 marks more than F's marks. Which of the following can be D's score?

(a) 94 (b) 60
(c) 89 (d) 78
(e) 81

Directions (Q. Nos. 34-39) Read the following information carefully and answer the questions that follow.

I. Seven students P, Q, R, S, T, U and V take a series of tests.
II. No two students get similar marks.
III. V always scores more than P.
IV. P always scores more than Q.
V. Each time either R scores the highest and T gets the least or alternatively S scores the highest and U or Q scores the least.

34. If V is ranked fifth, which of these must be true?

(a) S scores the highest (b) R is ranked second
(c) T is ranked third (d) Q is ranked fourth

35. If R gets the most, V should be ranked not lower than

(a) second (b) third
(c) fourth (d) fifth

36. If S is ranked second, which of the following can be true?

(a) P gets more than R
(b) V gets more than S
(c) P gets more than S
(d) U gets more than V

37. If S is ranked sixth and Q is ranked fifth, which of the following can be true?

(a) V is ranked fifth or fourth
(b) R is ranked second or third
(c) P is ranked second or fourth
(d) U is ranked third or fourth

38. If R is ranked second and Q is ranked fifth, which of these must be true?

(a) S is ranked third
(b) P is ranked third
(c) V is ranked fourth
(d) T is ranked sixth

39. Information given in which of the statement is superfluous?

(a) Only II (b) Only I
(c) Only IV (d) All are needed

Response & Interpretations (8.1)

1. (*d*) According to the question, sequence is as follows
Deepti > Sweta > Seema > Sohan > Seeta
So, Deepti is the eldest.

2. (*d*) According to the question,
Anil > Sunny
Baby > Sunny
Anil > Sunny > Bose
Anil > Baby
On arranging the above data, we get
Anil > Baby > Sunny > Bose
So, shortest person is Bose.

3. (*d*) According to the question,
Rakesh > Mukesh > Suresh
Amar > Rakesh> Harish
The relation between Harish and Suresh cannot be established from the given information.
So, it is not possible to find out the shortest person.

4. (*e*) According to the question,
A/Q > T > P/B
But P is not the shortest.
∴ A/Q > T > P > B
So, tallest is either A or Q.

5. (*a*) According to the question,
B > D
A/C > E
∴ B > D > A/C > Ⓔ
Clearly, shortest = E

6. (*b*) According to the question,
A > D
C > B > A
∴ Ⓒ > B > A > D
So, highest building is C.

7. (*a*) According to the question,
N > M
Y > M
N > X > Y
On arranging the above data, we get
∵ Ⓝ > X > Y > M
So, N is the most intelligent among them.

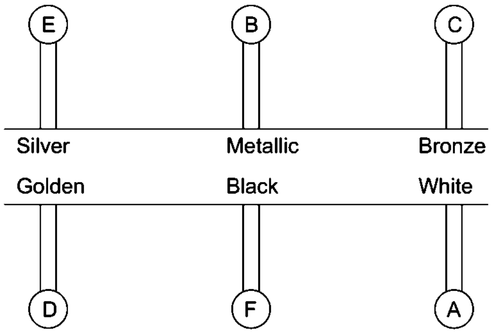
8. (*b*) The information given in the question may be arranged as follows
Bipul > Krishna > Barun > Sanjay
So, Bipul is the tallest.

9. (*c*) According to the question,

$J > M$
$L > N > K$
$\therefore$ $J > M > L > N >$ Ⓚ

So, shortest is K.

Solutions (Q. Nos. 10-11) *According to the question, the given information can be represented as*



Arrangement as per height $= E > D / B > A > C > F$ of poles.

10. (*d*) It cannot be established that which of the two poles B/D is taller but it is sure that either of B or D is the second tallest.

11. (*b*) The colour of tallest pole is silver.

Solutions (Q. Nos. 12-13) *Here,* H *and* T *in the subcript denote heavier and taller.*

$B_H > A_H$ and C_H $\quad$ $C_T > B_T$
$A_H > C_H$ $\quad$ $C_T > D_T$, $D_T > A_T$
$D_H > B_H$ $\quad$ $B_T > D_T$

12. (*c*) Ⓓ$_H$ $> B_H > A_H > C_H$

Here, D is the heaviest.

13. (*b*) Ⓒ$_T$ $> B_T > D_T > A_T$

Here, C is the tallest.

Solutions (Q. Nos. 14-18)

Let age of Mahima $= x$

Then, age of Anita $= 2x$

Age of Rajan $= \frac{x}{2}$

Age of Deepti $= 4x$

Age of Lata $= \frac{x}{4}$

Now, we have the following arrangement in descending order Deepti > Anita > Mahima > Rajan > Lata

14. (*c*) Lata is youngest.

15. (*a*) Deepti is eldest

16. (*d*) There are no two persons of the same age as per the given information.

17. (*c*) Anita is younger than Deepti.

18. (*a*) Mahima's age = 16 yr

$\therefore$ Lata's age $= \frac{16}{4} = 4$ yr

19. (*b*) According to the question,

$K > S > R$

Madhav is the tallest.

$K > A > S$

On arranging the above data, we get

$\therefore$ $M > K > A > S > R$

or

$$\begin{array}{ccccccccc} R & < & Ⓢ & < & A & < & K & < & M \\ \downarrow & & \downarrow & & \downarrow & & \downarrow & & \downarrow \\ 1 & & 2 & & 3 & & 4 & & 5 \end{array}$$

Hence, Shailendra will be the second.

K = Keshav
S = Shailendra
R = Rakesh
M = Madhav
A = Aashish

20. (*b*) Amit = Sumit, Sumit > Richa

Jyotsana > Richa > Saurabh

Jyotsana > Sumit

On arranging the above data, we get

$\therefore$ Jyotsana > Sumit = Amit > Richa > Saurabh

So, Jyotsana is eldest among them.

21. (*c*) Let the age of Shyam $= x$ yr

Then, age of Ram $= 2x$ yr

and age of Sohan $= 4x$ yr

$\because$ $4x > 2x > x$

On arranging the above data, we get

$\therefore$ Sohan > Ram > Shyam > Mohan

So, Sohan is the eldest.

22. (*b*) Decreasing order (agewise)

$P > R > Q > S$

Decreasing order (moneywise)

$R > S > P > Q$

23. (*d*) The data is inadequate because it is not given that who between Virat and Shikhar is taller. Hence, answer cannot be determined.

24. (*d*) According to the question,

Lakshmi > Meenu
Lakshmi > Leela > Meenu
Meenu > Hari > Latha

On arranging the above data, we get

Lakshmi > Leela > Meenu > Hari > Latha

Hence, Latha is the youngest.

25. (*a*) According to the question,

$S > R$
$R > G$
$P > S$

On arranging the above data, we get

Ⓟ $> S > R > G$

So, Priya is the eldest.

S = Sati
R = Renu
G = Geeta
P = Priya

26. (*c*) According to the question,

Sashi > Sunita (2 yr)
Sunita > Bindu (3 yr)
Shekhar > Bindu (1 yr)

$\therefore$ Sashi > Sunita > Shekhar > Bindu

So, youngest person in the group is Bindu.

27. (*c*) According to the question,

Priti > Rahul ; Yamuna = Divya
Lokita < Manju ; Rahul > Yamuna
Manju < Divya
∴ Priti > Rahul > Yamuna = Divya > Manju > Lokita

So, it is clear from the above arrangement, Lokita scored lowest among them.

28. (*c*) According to the question, R > P/U ; T/Q > S

∴ T/Q > S > R > P/U
∴ 3rd tallest = S

29. (*a*) According to the question,

Sita > Kanika
Sita > Ila > Kanika
Manas/ Kanika > Shempa
Kanika > Manas
∴ Sita > Ila > Kanika > Manas > Shempa

So, Shempa is youngest among them.

30. (*d*) According to the question,

Umesh > Satish
Neeraj > Suresh > Umesh
∴ Neeraj > Suresh > Umesh > Satish

So, Neeraj is tallest among them.

Solutions (Q. Nos. 31-33) *The six friends marks in descending order (>) are as follows*

B > D > F > C > E > A

31. (*a*) Given, third highest marks = 81 and E's marks = 62

Hence, C's possible marks lie between 62 and 81.
∴ C's possible marks = 70

32. (*e*) None is true with respect to the given information.

33. (*c*) Since, B scored highest marks.

∴ B's marks = F's marks + 13 = 81 + 13 = 94
D scored second highest marks.
So, D scored marks between 81 and 94.
Hence, D's possible marks = 89

Solutions (Q. Nos. 34-39)

According to the question, V > P ; P > Q
∴ V > P > Q
If R scores highest, we have R > ... > T
If S scores the highest, we have
S > ... > Q or S > ... > U

34. (*a*) If V ranks fifth, then P and Q coming after V will occupy sixth and seventh places respectively *i.e.*, Q ranks the least.
So, S will score the highest.

35. (*c*) If R gets the most, T ranks lowest and occupies seventh place. Since V always ranks above P and Q, so at the maximum, P and Q will occupy fifth and sixth places.
Hence, V will not rank lower than fourth.

36. (*d*) If S ranks 2nd, R ranks 1st and T ranks lowest. The order V > P > Q will be followed. out of all the given options, only the arrangement given as per option (d) *i.e.*, R > S > U > V > P > Q > T is possible. Clearly, options (a), (b) and (c) cannot follow. So, option (d) is correct.

37. (*d*)If S is ranked 6th and Q is ranked 5th , we have

O > O > O > O > Q > S > O

In this case, R will rank the highest and thus T will rank the least.
We have, R > O > O > O > Q > S > T
Also, the order V > P > Q will be maintained
The possible arrangements are

R > U > V > P > Q > S > T
or R > V > U > P > Q > S > T
or R > V > P .> U > Q > S > T

Thus, option (d), *i.e.*, U can be ranked third or fourth is true.

38. (*d*) If R is ranked 2nd, S will rank 1st and Q or U lowest but Q ranks 5th. So, U ranks lowest. Also, the order V > P > Q will be followed.

∴ Arrangement S > R > V > P > Q > T > U
1 2 3 4 5 6 7

Hence, 6th place will be occupied by T.

39. (*d*)All are needed.

Type 2 Position Test

In this type of questions, the rank or position of a person(s) from either of the two ends of a raw/queue is given and it is asked to determine things such as the total number of persons in the group or the number of persons to the left/right (or above/below) of a particular person etc.

Sometimes, such questions are given in the form of a puzzle involving interchanging of seats by two or more persons.

Different type of position tests will give you a better idea about the type of questions

Rank of a Person/Object from Top or Bottom/from Left or Right

In this type of questions, it is asked to determine the rank or position of a person/object in a group of persons/objects either from the left (or right) or from the top (or bottom) depending upon the arrangement. The position or rank can be calculated with the help of following formulae

(i) Position (or rank) from the left end (or top) = (Total number of persons/students – Rank from the right end (or bottom) +1
(ii) Position (or rank) from the right end (or bottom) = (Total number of persons/students

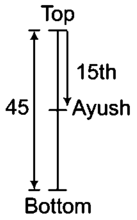
– Rank from the left end (or top) +1

Examples given below will help you to understand this type of questions

Ex **6** In class of 45 students rank of Ayush is 15 from top, then rank of Ayush from bottom is **[SSC (Multitasking) 2009]**

(a) 30 (b) 32 (c) 31 (d) 35

Sol. (*c*)



Ayush's rank from the bottom = Total number of students – Rank of Ayush from top + 1 = 45 – 15 + 1 = 31

Ex **7** In a row of 40 girls, when Komal was shifted to her left by 4 places, her place from the left end of the row became 10. What is the position of Swati from the right end of the row, if Swati was three places to the right of Komal's original position? **[Syndicate Bank (Clerk) 2010]**

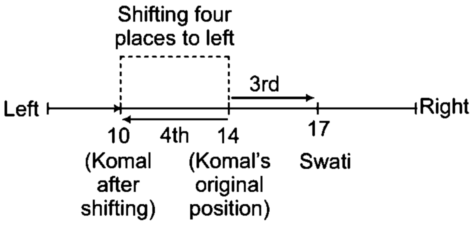
(a) 22 (b) 23 (c) 25 (d) 24

(e) None of these

Sol. (*d*) On shifting 4 places to the left, Komal is 10th from the left end of the row. Thus, Komal's original position was 14th from the left end.

Swati is 3 places to the right of Komal's original position. Clearly, Swati is 17th from the left end.

This can be easily understood from the following figure



Now, Swati's position from right = (Total number of girls – Swati's position from left) + 1 = 40 – 17 + 1 = 23 + 1 = 24

So, Swati is 24th from the right end of the row.

Total Number of Objects/Persons in Queue

In this type of questions, it is asked to calculate the total number of persons when the rank of a person from both the ends is given. Following formula is helpful in the calculation of total number of objects/persons in a queue.

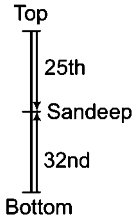
Total number of persons/in a row or queue = (Position (or rank) of a person from the left end (or top or front) + Position (or rank) of the person from the right end (or bottom or last) –1.

Examples discussed below will help understand this type of questions

Ex **8** In a class of students, Sandeep is 25th from top and 32nd from bottom in a class, then total number of students in the class is

(a) 56 (b) 50 (c) 57 (d) 58

Sol. (*a*) The information given in the question can be represented as shown below

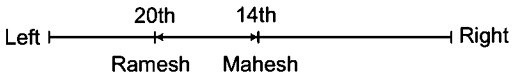


Total students in a class = (Rank of Sandeep from top + Rank of Sandeep from bottom) −1 = 25 + 32 − 1 = 57 − 1 = 56

***Ex* 9** In a class of thirty students, Mahesh is 14th from the left and Ramesh is 20th from the right end. How many students are there between Ramesh and Mahesh? **[SSC (CPO) 2010]**

(a) 3 (b) 2 (c) 4 (d) Data inadequate

Sol. (*b*)



Ramesh's position from left = 30 − 20 + 1 = 10 + 1 = 11th

Mahesh's position from left = 14th

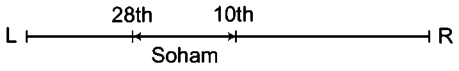
Clearly, there are 2 students in between Ramesh and Mahesh.

Hence, option (b) is the correct answer.

***Ex* 10** In a queue, Soham is 10th from left and 28th from right . How many people in the queue?

(a) 38 (b) 35 (c) 37 (d) 42

Sol. (*c*) Total persons in the queue = (Sum of positions of Soham from both ends)−1



= (10+28) −1 = 38 −1=37

***Ex* 11** In a row of students, Anil is 7th from the left while Jack is 18th from right. Both of them interchange their positions such that Anil becomes 21st from the left. How many people are there in the row? **[SSC (CGL) 2011]**

(a) 38 (b) 39 (c) 40 (d) None of these

Sol. (*a*) Anil's original position from left = 7th

Jack's original position from right = 18th

Anil's position from left after interchange = 21st

Since, Anil exchanged his seat with Jack, it means Jack's original position is 21st from the left.

∴ Total number of people = (Initial/ position of Jack from the right + Initial position of Jack from the left) − 1

= 18 + 21 − 1 = 38

New Position of a Person (s) After Interchange of Positions between Two Persons

In this type of questions, the positions of two persons/objects are interchanged and it is asked to determine their new positions (from the left or right) which can be calculated with the help of following formulae.

(i) New position/place of first person after the interchange

$$= \begin{bmatrix}\text{Difference of two}\\ \text{positions / places}\\ \text{of second person}\end{bmatrix} + [\text{Initial position/place of second person}]$$

(ii) New position /place of second person after the interchange

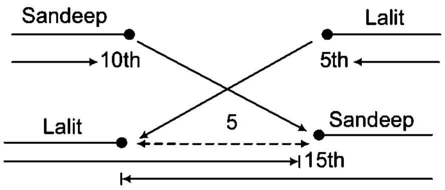
$$= \begin{bmatrix}\text{Difference of two}\\ \text{positions / places}\\ \text{of second person}\end{bmatrix} + [\text{Initial position/place of second person}]$$

Example discussed below with help understand this type of questions

***Ex* 12** In a queue of boys, Sandeep is 10th from left and Lalit is 5th from right. The places of Sandeep and Lalit are interchanged. If the new position of Sandeep is 15th from left, then the new position of Lalit from right is

(a) 10th (b) 11th (c) 12th (d) 13th

Sol. (*a*)



New position of Lalit from right end = [Difference of the two positions of Sandeep] + [Initial position of Lalit]
= (15 −10)+5 = 5+5 =10th position

Number of Persons/Objects between the Original and Changed Position

In this type of questions, total number of persons between the original and new position of a person is asked which can be calculated by the given formula.

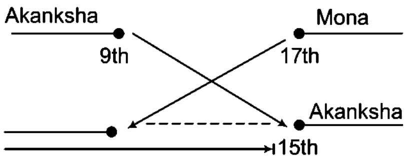
Total number of persons of between two positions = New position − Old position −1

Example given below will help you to understand this type of questions

***Ex* 13** In a queue of girls, Akanksha is 9th from left and Mona is 17th from right. If the positions of Akanksha and Mona are interchanged, then new position of Akanksha is 15th from left. Find the number of girls between Mona and Akanksha.

(a) 4 (b) 5 (c) 6 (d) 7

Sol. (*b*)



Total number of persons between Mona and Akanksha = 15 − 9 − 1 = 5

Number of Persons in an Alternate Order

In these type of questions, number of persons standing in an alternate order under certain conditions is asked. The candidate is required to analyse the given information and answer accordingly.

Example given below will help you to understand this type of questions

***Ex* 14** At a ticket counter there are 17 persons in a queue. If every second person in the queue is a female and also in the starting and at the end there is a female, then the total number of males in the queue is

(a) 7 (b)10 (c) 8 (d) 9

Sol. (c) Queue of the 17 persons can be shown as

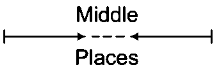
F M F M F M F M F M F M F M F M F

∴ Total number of males = 8

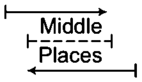
Maximum and Minimum Number of Persons in a Row

If positions of two persons from the two opposite ends and the total number of places between these two positions is given, then

(i) Maximum number of persons that can be present in the row = Sum of positions of both persons + Number of places in the middle



(ii) Minimum number of persons that can be present in the row = Sum of positions of both persons – Number of places in the middle – 2

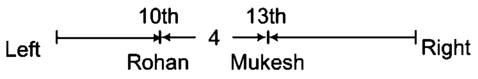


Example given below will help you to understand this type of questions

***Ex* 15** If in a row, Rohan is 10th from left and Mukesh is 13th from right and there are four persons in between Rohan and Mukesh, then find the maximum and minium number of persons in the row.

(a) 27, 18 (b) 27, 17 (c) 30, 15 (d) 30, 19

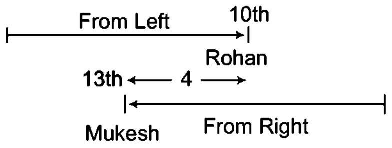
Sol. (*b*) For maximum number of persons, arrangement in the row will be as follows



Total number of persons = Sum of positions of both persons + Number of places in middle

=10 + 13 +4 = 27

For minimum number of persons, arrangement in the row will be given as follows



∴ Total number of persons = Sum of positions of both places – Number of places in middle – 2 = (10 + 13) – 4 – 2 = 17

Hence, option (b) is the correct answer.

Practice Corner **8.2**

Build your Confidence...

1. Rashmi is 14th from the right end in a row of 40 girls. What is her position from the left end?

(a) 25th (b) 27th
(c) 21st (d) None of these

2. Kavi ranked 9th from the top and 38th from the bottom in a class. How many students are there in the class?

(a) 45 (b) 42 (c) 46 (d) 44

3. In a row of boys, Jeevan is 7th from the start and 11th from the end. In another row of boys, Vikas is 10th from the start and 12th from the end. How many boys are there in both the rows together? **[UCO Bank (PO) 2005]**

(a) 38 (b) 40
(c) 32 (d) Cannot be determined
(e) None of these

4. 37 boys are standing in a row facing the school building. Ashwini is 15th from the left end. If he is shifted six places to the right, what is his position from the right end? **[Andhra Bank (Clerk) 2007]**

(a) 16th (b) 21st
(c) 20th (d) 18th
(e) None of these

5. In a row of girls, Kamya is fifth from the left and Preeti is sixth from the right. When they exchange their positions, then Kamya becomes thirteenth from the left. What will be Preeti's position from the right? **[Hotel Mgmt 2004]**

(a) 7th
(b) 14th
(c) 11th
(d) 18th

6. In a row of 25 children, Nayan is 14th from the right end. Arun is 3rd to the left of Nayan in the row. What is Arun's position from the left end of the row? **[UCO Bank (Clerk) 2011]**

(a) 8th (b) 9th (c) 7th (d) 10th
(e) None of these

7. A class of girls stands in a single line. One girl is 19th in order from both the ends. How many girls are there in the class?

(a) 27 (b) 37 (c) 38 (d) 39

8. Surbhi ranks 18th in a class of 49 students. What is her rank from the last? **[UP B. Ed. 2011]**

(a) 31 (b) 28 (c) 35 (d) 32

9. There are 35 students in a class. Suman ranks third among the girls in the class. Amit ranks 5th among the boys in the class. Suman is one rank below Amit in the class. No, two students hold the same rank in the class. What is Amit's rank in the class?

(a) 7th (b) 5th
(c) 8th (d) Cannot be determined

10. In a row of children facing North, Ritesh is 12th from the left end. Sudhir, who is 22nd from the right end is 4th to the right of Ritesh. Total how many children are there in the row? **[Andhra Bank (Clerk) 2008]**

(a) 35 (b) 36 (c) 37 (d) 34
(e) None of these

11. In a class of 45 students, a boy is ranked 20th. When two boys joined, his rank was dropped by one. What is his new rank from the end? **[UPSC (CSAT) 2013]**

(a) 25th (b) 26th (c) 27th (d) 28th

12. Sohan ranks 7th from the top and 26th from the bottom in a class. How many students are there in the class? **[NIFT (UG) 2014, SSC (10+2) 2013]**

(a) 31 (b) 32 (c) 33 (d) 34

13. There are 25 boys in a horizontal row. Rahul was shifted by three places towards his right side and he occupies the middle position in the row. What was his original position from the left end of the row? **[CG PSC 2013]**

(a) 15th (b) 16th (c) 12th (d) 10th
(e) None of these

14. In a row of letters, a letter is 5th from left end and 12th from the right end. How many letters are there in a row? **[SSC (10 + 2) 2013]**

(a) 15 (b) 16 (c) 17 (d) 18

15. Sunita is the 11th from either end of a row of girls. How many girls are there in that row? **[SSC (10 + 2) 2013]**

(a) 19 (b) 20 (c) 21 (d) 22

16. In a row of girls, Veena is 12th from the start and 19th from the end. In another row of girls, Sunita is 14th from the start and 20th from the end. How many girls are there in both the rows together? **[SSC (Multitasking) 2013]**

(a) 72 (b) 65 (c) 63 (d) 61

17. Aman is 16th from the left end in a row of boys and Vivek is 18th the from right end. Gagan is 11th from Aman towards the right and 3rd from Vivek towards the right end. How many boys are there in the row? **[SBI (PO) 2007]**

(a) 40 (b) 42
(c) 48 (d) 41
(e) None of these

Response & Interpretations **(8.2)**

1. (*b*) Required position = (40 + 1 – 14) = 27th

2. (*c*) Required number = (38 + 9 – 1) = 47 – 1 = 46

3. (*a*) Total number of boys
= (Number of boys in Jeevan's row) + (Number of boys in Vikas's row)
= (6 + 1 + 10) + (9 + 1 + 11) = (17 + 21) = 38

4. (*e*) Now, position of Ashwini = (15 + 6)
= 21st from left
∴ Ashwini's position from right = (37 + 1 – 21) = 17th

5. (*b*) Kamya's new position is 13th from left. But it is the same as Preeti's earlier position which is 6th from the right.
The row consists of (12 + 1 + 5) = 18 girls
Now, Preeti's new position is Kamya's earlier position which is 5th from the left.
∴ Preeti's new position from the right = 18 – 5 + 1
= 13 + 1 = 14

6. (*b*) Nayan's position from left = (25 + 1 – 14) = 12 th
∴ Arun's position = (12 – 3)
= 9 th from left

7. (*b*) Clearly, the girl at the 19th position is exactly in the middle of both the ends.
∴ Total number of girls = (18 + 1 + 18) = 37

8. (*d*) Surbhi's rank from last = (49 + 1 – 18) = 32

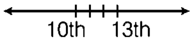
9. (*a*) Suman ranks 3rd in the class among the girls.
Amit ranks 5th among the boys.
Suman comes one rank after Amit in the class.
It means two girls and four boys rank higher than Amit in the class.
So, Amit ranks 7th in the class.

10. (*c*) Sudhir's position from left = (12 + 4) = 16 th from left
Clearly, there are three students between Ritesh and Sudhir.
∴ Total number of children = (12 + 3 + 22) = 37

11. (*c*) Total number of boys after 2 new boys joined = 47
Since, the rank of the boy dropped by 1, it became 21st 20th.
∴ His new rank from the end = 47 – 21 + 1 = 27th

12. (*b*) Total students in the class = 7 + 26 – 1 = 33 – 1 = 32

13. (*d*) When Rahul was shifted by three places towards his right side, then he occupies the middle position *i.e.,* 13th position.



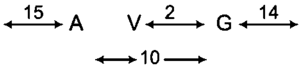
Thus, his original position from the left end of the row
= 13 – 3 = 10th

14. (*b*) Number of letters in the row = 5 + 12 – 1 = 16

15. (*c*) Total number of girls = 11 + 11 – 1 = 22 – 1 = 21

16. (*c*) In first row, Veena is 12th from start and 19th from end.
Then, total number of girls = (12 + 19 – 1) = 30
In second row, Sunita is 14th from start and 20th from the end.
Then, total number of girls = (14 + 20 – 1) = 33
∴ Total number of girls = 30 + 33 = 63

17. (*d*) Vivek is 18th from the right end and Gagan is third to the right of Vivek. So, Gagan is 15th from the right end. There are 15 boys to the left of Aman, 10 boys between Aman and Gagan and 14 boys to the right of Gagan



∴ Number of boys in the row = 15 + 1 + 10 + 1 + 14 = 41

Type 3 Time Sequence Test

In these questions, the candidate is required to find out a particular day/date on the basis of several statements provided to them. The questions asked from this section neither require a special methodology nor any special formulae. The questions are very basic in nature and require common sense.

Examples given below will help you to understand these type of questions

***Ex* 16** Kamal remembers that his brother Dinu's birthday falls after 20th May but before 28th May, while Garima remembers that Dinu's birthday falls before 22nd May but after 12th May. On what date Dinu's birthday falls?

(a) 22nd May (b) 21st May (c) Cannot be determined (d) None of these

Sol. (*b*) According to Kamal, Dinu's birthday falls on one of the days — $\boxed{21st}$, 22nd, 23rd, 24th, 25th, 26th or 27th May.
According to Garima, Dinu's birthday falls on one of the days 13th, 14th, 15th, 16th, 17th, 18th 19th, 20th or $\boxed{21st}$ May.
The common date in both the group of dates = $\boxed{21st}$ May
Clearly, Dinu's birthday falls on 21st May.

***Ex* 17** Radha remembers that her father's birthday is after 16th but before 21st of March, while her brother Mahesh remembers that his father's birthday is before 22nd but after 19th of March. On which date is the birthday of their father?

(a) 19th (b) 20th (c) 21th (d) Cannot be determined

Sol. (*b*)

According to	Possiblity of Date
Radha	17, 18, 19, ⑳
Mahesh	⑳, 21

Here, 20th is common to both.
So, their father's birthday is on 20th March.

Practice Corner **8.3**

Build your Confidence...

1. Ayush remembers that Sanjay 's birthday is certainly after January 12 but not later than 16th January. If Mehar remembers that Sanjay's birthday is before 17th of Jan but not before 13th Jan. On which of the following day was Sanjay's birthday?

(a) 14th
(b) 15th
(c) 16th
(d) Either 14th or 15th

2. Sameer remembers that his brother's birthday is after fifteenth but before 18th of February whereas his sister Kanika remembers that her brother's birthday is after 16th but before 19th of February. On which day in February is Sameer's brother's birthday?

(a) 15th February
(b) 18th February
(c) 17th February
(d) None of these

3. Pratap correctly remembers that his mother's birthday is before 23rd April but after 19th April, whereas his sister correctly remembers that their mother's birthday is not on or after 22nd April. On which day in April is definitely their's mother's birthday? **[Canara Bank (PO) 2010]**

(a) 20th
(b) 21st
(c) 20th or 21st
(d) Cannot be determined
(e) None of these

4. Rajat correctly remembers that his mother's birthday is not after 18th of June. His sister correctly remembers that their mother's birthday is before 20th June but after 17th June.On which day in April was definitely their mother's birthday?

(a) 17th
(b) 19th
(c) 18th
(d) 17th or 18th

5. Meena correctly remembers that her father's birthday is after 18th May but before 22nd May. Her brother correctly remembers that their father's birthday is before 24th May but after 20th May. On which date in May was definitely their father's birthday? **[Andhra Bank (PO) 2010]**

(a) 20th
(b) 19th
(c) 18th
(d) Cannot be determined
(e) None of these

6. Mohan correctly remembers that his father's birthday is before 20th January but after 16th January whereas his sister correctly remembers that their father's birthday is after 18th January but before 23rd January. On which date in January is definitely their father's birthday? **[Syndicate Bank (PO) 2010]**

(a) 18th
(b) 19th
(c) 20th
(d) Data inadequate
(e) None of these

7. Satish read a book on Sunday. Sudha read that book one day prior to Anil but 4 days after Satish. On which day did Anil read the book?

(a) Friday
(b) Thursday
(c) Tuesday
(d) Saturday

8. Nitin correctly remembers that Nidhi's birthday is before Friday but after Tuesday. Deepak correctly remembers that Nidhi's birthday is after Wednesday but before Saturday. On which of the following days does Nidhi's birthday definitely fall? **[PNB (Clerk) 2009]**

(a) Monday
(b) Tuesday
(c) Wednesday
(d) Thursday
(e) Cannot be determined

9. Samant remembers that his brother's birthday is after 16th but before 20th of January, while his sister remembers that her brothers' birthday is after 17th but before 19th of February. On which date of January, is Samant's brother's birthday?

(a) 16 th
(b) 18 th
(c) 19 th
(d) 17 th

10. Vinay remembers that his brother Anupam's birthday is after 20th of August but before 28th of August, while Rita remembers that Anupam's birthday is before 22nd of August but after 12th of August. On which date does Anupam's birthday fall? **[RRB (PO) 2010]**

(a) 20th August
(b) 21th August
(c) 22nd August
(d) Cannot be determined
(e) None of these

11. Sneha correctly remembers that her father's birthday is before 16th june but after 11th june whereas, her younger brother correctly remembers that their father's birthday is after 13th june but before 18th june and her elder brother correctly remembers that their father's birthday is on an even date. On what date in june, is definitely their father's birthday? **[Vijaya Bank (Clerk) 2010]**

(a) Sixteenth
(b) Twelfth
(c) Fourteenth
(d) Data inadequate
(e) None of these

12. Ranjana correctly remembers that Kiran's birthday was after Tuesday but before Friday. Rajan correctly remembers that Kiran's birthday was after Wednesday but before Sunday. On which day of the week does Kiran's birthday definitely fall ? **[CBI (Clerk) 2009]**

(a) Monday
(b) Thursday
(c) Saturday
(d) Cannot be determined
(e) None of the above

Response & Interpretations **(8.3)**

1. (*a*) Days by Ayush, [13, $\boxed{14, 15}$] in January
Days by Mehar, [$\boxed{14, 15}$, 16] in January
Clearly, 14th and 15th January are common in both the groups.
Hence, the correct answer is either 14th or 15th January.

2. (*c*) Days by Sameer [16, ⑰] in February
Days by Kanika [⑰, 18] in February
17th February is common in both the groups.
Cleary, the correct date is 17th February.

3. (*c*) Days by Pratap –[$\boxed{20, 21}$ or 22] in April
Days by his sister: not on or after 22 April
Clearly, the answer is = [$\boxed{20 \text{ or } 21}$] in April.

4. (*c*) Days by Rajat, June ⑱ or earlier.
Days by his sister, June ⑱ or June 19.
Clearly, June 18 is the required day.

5. (*e*) Days by Meena, 19th, 20th or 21st May.
Days by her brother, 21st, 22nd or 23rd May.
Clearly, 21st may is common in both the groups and hence it is the required day.

6. (*b*) Days by Mohan, [17th, 18th or ⑲th] January.
Days by sister, [⑲th, 20th, 21st or 22nd] January.
Required day is 19th January as it is common in both the groups.

7. (*a*) Sudha read the book 4 days after Sunday. It means Sudha read the book on Thursday. Hence, Anil will read the book on Friday.

8. (*d*)

According to	Nitin's Birthday
Nitin	Wednesday, $\boxed{\text{Thursday}}$
Deepak	$\boxed{\text{Thursday}}$, Friday

Here, Thursday is common to both. Hence, correct day is Thursday.

9. (*b*)

According to	Possibility of Date
Samant	17, ⑱, 19
Sister	⑱

Here, 18th is common to both. Hence, the correct date is 18th January.

10. (*b*)

According to	Possibility of Date
Vinay	㉑, 22, 23, 24, 25, 26, 27
Rita	13, 14, 15, 16, 17, 18, 19, 20, ㉑

Here, 21 is common to both. So, the correct date is 21st August.

11. (*c*)

According to	Possibility of Date
Sneha	12, 13, ⑭, 15
Younger Brother	⑭, 15, 16, 17
Elder Brother	..., ⑭, 16, ...

Here, 14 is common to all the groups. Hence, the correct date is fourteenth.

12. (*b*)

According to	Possiblity of Date
Ranjana	Wednesday, $\boxed{\text{Thursday}}$
Rajan	$\boxed{\text{Thursday}}$, Friday, Saturday

Clearly, Thursday is common to both. Hence, the correct day is Thursday.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-3) Read the following information carefully and answer the questions that follow. **[MAT 2006]**

I. There is a group of five girls.
II. Kamini is second in height but younger than Rupa.
III. Pooja is taller than Monika but younger in age.
IV. Rupa and Monika are of the same age but Rupa is tallest between them.
V. Neelam is taller than Pooja and elder to Rupa.

1. If they are arranged in the ascending order of height, who will be in the third position?

(a) Monika (b) Monika or Rupa
(c) Rupa (d) None of these

2. If they are arranged in descending order of their ages, who will be in the fourth position?

(a) Monika or Rupa (b) Monika
(c) Kamini (d) None of these

3. To answer the question, "Who is the youngest person in the group", which of the following statements is superfluous?

(a) Only I
(b) Only V
(c) Only II
(d) Either I or IV

4. There are four persons A, B, C and D. The total amount of money with A and B together is equal to the total amount of money with C and D together but the total amount of money with B and D together is more than the amount of money with A and C together. The amount of money with A is more than that with B. Who has the least amount of money?

(a) B
(b) C
(c) D
(d) Cannot be determined

5. Each of A, B, C, D and E has different amount of money. C has more money only than E, B and A. Who has the maximum amount of money? **[Syndicate Bank (PO) 2010]**

(a) C
(b) D
(c) E
(d) Data inadequate
(e) None of the above

Directions (Q. Nos. 6-10) Read the following information carefully and answer the questions that follow.

A blacksmith has five iron articles A, B, C, D and E each having a different weight.

I. A weighs twice as much as B.
II. B weighs four and half times as much as C.
III. C weighs half as much as D.
IV. D weighs half as much as E.
V. E weighs less than A but more than C.

6. Which of the following is the lightest in weight?

(a) A (b) B (c) C (d) D

7. E is lighter in weight than which of the other two articles?

(a) A, B (b) D, C (c) A, C (d) D, B

8. E is heavier than which of the following two articles?

(a) D, B (b) D, C (c) A, C (d) A, B

9. Which of the following is the heaviest in weight?

(a) A (b) B (c) C (d) D

10. Which of the following represents the descending order of weights of the articles?

(a) A, B, E, D, C (b) B, D, E, A, C
(c) A, B, C, D, E (d) C, D, E, B, A

11. In a row at a bus stop, A is 7th from the left and B is 9th from the right. They both interchange their positions. Now, A becomes 11th from the left. How many people are there in the row? **[SSC (CPO) 2013]**

(a) 10 (b) 20 (c) 19 (d) 18

Directions (Q. Nos. 12-15) Read the following information carefully and answer the questions that follow.

Sunita is taller than Seema and Renu, Renu is shorter than Radha and Gauri. Bina is taller than Radha and shorter than Sunita. Sunita is not the tallest and Renu is not the shortest.

12. Who is the tallest?

(a) Sunita (b) Bina
(c) Gauri (d) Data inadequate

13. Who is the shortest?

(a) Radha (b) Renu (c) Bina (d) Seema

14. What is the position of Radha from the shorter end?

(a) Fourth (b) Second
(c) Third (d) Data inadequate

15. Which of the following statements is definitely correct?

(a) Bina occupies the third position from the top
(b) Seema is taller than Renu
(c) Gauri is shorter than Radha
(d) None of the above

Directions (Q. Nos.16-19) Read the following information and answer the questions that follow.

In a study of five brands of pain relieving tablets P, Q, R, S and T, the brands were tested and ranked against each other as more or less effective per dose. The following results were obtained.

I. P was more effective than Q.
II. The effectiveness of R was less than that of S.
III. T was the least effective brand tested.
IV. Q and R were equally effective.
V. The effectiveness of S was greater than that of Q.

16. If the above statements are true, which of the following must also be true?

(a) P and S were equally effective
(b) P was the most effective
(c) S was the most effective
(d) R was less effective than P

17. All the informations in the results given above can be derived from which of the following groups of statements?

(a) Statements I, II and III
(b) Statements I, III and IV
(c) Statements I, III and V
(d) Statements I, II, III and IV

18. If a sixth brand M is tested and found to be more effective than S, then which of the following must be true, if the findings of the study are correct?

(a) M is the most effective of all the six brands tested
(b) Atleast four of the six brands tested are less effective than M
(c) M is more effective than P
(d) M is less effective than P

19. If R is more expensive per dose than P and T is less expensive per dose than R, which of the following must be true, according to the study, for a consumer, who wishes to buy a pain reliever with the greatest effectiveness for the amount spent per dose?

(a) P should be purchased instead of R
(b) P should be purchased instead of T
(c) T should be purchased instead of R
(d) Q should be purchased instead of R, if Q is of the same price as S

Directions (Q. Nos. 20-25) Read the following information carefully and answer the questions that follow.

Six compounds are being tested for possible use in a new anti-poison, 'Sweet 'N' Deadly'.

I. U is sweeter than V and more deadly than Z.
II. V is sweeter than Y and less deadly than Z.
III. W is less sweet than X and less deadly than U.
IV. X is less sweet and more deadly than Y.
V. Y is less sweet and more deadly than U.
VI. Z is sweeter than U and less deadly than W.

20. Which is the sweetest?

(a) U (b) W (c) X (d) Z

21. Which of the following is/are both sweeter and more deadly than V?

(a) Only U (b) Only W (c) Only Z (d) U and Z

22. Which of the following statement adds no new information about sweetness to the statements that precede it?

(a) I (b) III (c) IV (d) V

23. Which of the following is/are sweeter than Y and more deadly than W?

(a) Only U (b) Only V (c) Only Z (d) U and V

24. Which is the least deadly?

(a) U (b) V (c) W (d) Y

25. Which is the most deadly?

(a) Z (b) W (c) Y (d) X

26. Mukesh is taller than Suresh but shorter than Rakesh. Rakesh is taller than Harish but shorter than Amar. Who among them is the shortest with regards to height?

(a) Mukesh (b) Suresh
(c) Harish (d) Cannot be determined
(e) None of these

27. Roshan is taller than Hardik who is shorter than Sushil. Niza is taller than Harry but shorter than Hardik. Sushil is shorter than Roshan. Who is the tallest?

[SSC (Multitasking) 2013]

(a) Roshan (b) Sushil (c) Hardik (d) Harry

28. Among five boys, Vasant is taller than Manohar but not as tall as Raju. Jayant is taller than Dutta but shorter than Manohar. Who is the tallest in the group?

[SSC (10+2) 2006]

(a) Raju
(b) Manohar
(c) Vasant
(d) Cannot be determined

Master *Exercise*

29. Gita is older than her cousin Mita. Mita's brother Bhanu is older than Gita. When Mita and Bhanu are visiting Gita, all three like to play a game of Monopoly. Mita wins more often than Gita does.

Which of the following can be concluded from the above? **[IIFT 2012]**

(a) When he plays Monopoly with Mita and Gita, Bhanu often loses.
(b) Of the three, Gita is the oldest
(c) Gita hates to lose at Monopoly
(d) Of the three, Mita is the youngest

30. Priya is taller than Tiya and shorter than Siya. Riya is shorter than Siya and taller than Priya. Riya is taller than Diya, who is shorter than Tiya. Arrange them in order of descending heights. **[IIFT 2012]**

(a) Priya—Siya—Riya—Tiya—Diya
(b) Riya—Siya—Priya—Diya—Tiya
(c) Siya—Riya—Priya—Tiya—Diya
(d) Siya—Priya—Riya—Diya—Tiya

31. Among Anil, Bibek, Charu, Debu and Eswar, Eswar is taller than Debu but not as fat as Debu. Charu is taller than Anil but shorter than Bibek. Anil is fatter than Debu but not as fat as Bibek. Eswar is thinner than Charu who is thinner than Debu. Eswar is shorter than Anil. Who is the thinnest person? **[IIFT 2008]**

(a) Bibek (b) Charu (c) Debu (d) Eswar

32. Five students participated in the scholarship examination. Sudha scored higher than Puja. Kavita scored lower than Suma but higher than Sudha. Mamta scored between Puja and Sudha. Who scored lowest in the examination? **[MAT 2013]**

(a) Kavita (b) Puja (c) Mamta (d) Sudha

33. There are five books A, B, C, D and E. Book C lies above D, book E is below A, D is above A and B is below E. Which book is at the bottom? **[MAT 2013]**

(a) E (b) B
(c) A (d) C

34. In a class of students, Sairam's rank is 23rd from top in Mathematics, whereas his rank is 27th from below in Physics. How many students are there in the class? **[Canara Bank (PO) 2011]**

(a) 50 (b) 40
(c) 48 (d) Data inadequate
(e) None of these

35. Mohit correctly remembers that his father's birthday is not after 18th of April. His sister correctly remembers that their father's birthday is before 20th but after 17th of April. On which day in April was definitely their father's birthday? **[Corporation Bank (Clerk) 2010]**

(a) 17th (b) 19th
(c) 18th (d) 17th or 18th
(e) None of these

36. Dilip's position from the left in a row of students is 10th and Jagdish's position is 20th from the right. Both of them interchange their positions and Jagdish becomes 23rd from the right. How many students are there in the row? **[SSC (DEO) 2009]**

(a) 33 (b) 44 (c) 42 (d) 32

37. Jaya's position from the left in a row of students is 12th and Rekha's position from the right is 20th. After interchanging their position, Jaya becomes 22nd from the left. How many students are there in the row? **[SSC (CPO) 2008]**

(a) 30 (b) 31 (c) 41 (d) 34

38. Samant remembers that his brother's birthday is after 15th but before 18th of February while his sister remembers that her brother's birthday is after 16th but before 19th of February. On which date in February is Samant's brother's birthday? **[SSC (CPO) 2011]**

(a) 16th (b) 18th (c) 19th (d) 17th

39. In a class among the passed students Neeta is 22nd from the top and Kalyan, who is 5 ranks below Neeta is 34th from the bottom. All the students from the class appeared for an examination. If the ratio of the students who passed in the examination to those who failed is 4 : 1 for the class, how many students were there in the class? **[Corporation Bank (PO) 2008]**

(a) 90 (b) 60
(c) 75 (d) Data inadequate
(e) None of these

40. Seema correctly remembers that she took leave after 21st October and before 27th October. Her colleague Rita took leave on 23rd October but Seema was present on that day. If 24th October was a public holiday and 26th October was Sunday, on which day in October did Seema take leave? **[IDBI Bank (PO) 2010]**

(a) 22nd October (b) 25th October
(c) 22nd or 25th October (d) Data inadequate
(e) None of these

41. Among P, Q, R, S and T each having a different weight, R is heavier than S but lighter than T. P is lighter than S. Who among them is the heaviest? **[SBI (PO) 2009]**

(a) T (b) Q
(c) Either T or Q (d) Data inadequate
(e) None of these

Directions (Q. Nos. 42-43) Read the following information carefully and answer the questions that follow **[SNAP 2013]**

Six students A, B, C, D, E and F participated in a dancing competition wherein they won prizes 12000, 10000, 8000, 6000, 4000, 2000 according to the position secured. The following information is known to us

I. A won less money than B.
II. The difference between the winning of C and F was ₹ 2000.
III. The difference between the winning of D and F was at least ₹ 4000.
IV. E won the ₹ 8000 prize.

42. Which of the following could be the ranking from first place to sixth place of students?

(a) A, D, E, B, F, C (b) B, A, E, C, F, D
(c) F, B, E, A, C, D (d) B, A, E, D, C, F

43. If A won ₹ 4000, how much in total did C and F win?

(a) ₹ 6000 (b) ₹ 10000 (c) ₹ 22000 (d) ₹ 18000

44. Examine the following statements **[UPSC (CSAT) 2012]**

I. Rama scored more than Rani.
II. Rani scored less than Ratna.
IIII. Ratna scored more than Rama.
IV. Padma scored more than Rama but less than Ratna.

Who scored the highest?

(a) Rama
(b) Padma
(c) Rani
(d) Ratna

Response & Interpretations (Master Exercise)

Solutions (Q. Nos. 1-3) *Descending order of heights and ages is as given below*

Height Rupa > Kamini > Neelam > Pooja > Monika
Age Neelam > Rupa = Monika > Pooja > Kamini
or Neelam > Rupa = Monika > Kamini > Pooja
Persons are arranged

1. (*d*) Neelam will be in the third position when the persons are arranged in ascending order of height.

2. (*d*) Fourth position cannot be determined, if they are arranged in descending order of their ages.

3. (*a*) Only Statement I is superfluous.

4. (*b*) According to the question,

$$A + B = C + D ; \quad B + D > A + C; \quad A > B$$

Now, $B + D > A + C$ and $A > B$

$\Rightarrow \quad B + D > A + C > B + C \quad \Rightarrow B + D > B + C \Rightarrow D > C$

Now, $B + D > A + C \quad \Rightarrow \quad B + D = A + C + K$

Also, $A + B = C + D \quad \Rightarrow \quad B - D = C - A$

$\Rightarrow \quad 2B = 2C + K \quad \Rightarrow \quad B > C \quad \Rightarrow \quad A > B > C$

$D > C$

Clearly, each one of A, D and B has more amount than C. Hence, C has the least amount.

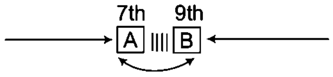
5. (*b*) As per the given information C has more amount than only E/B/A. So, it means D > C > E/ B/ A arrangement can be established.
So, D has maximum amount of money.

Solutions (Q. Nos. 6-10)

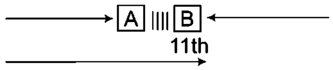
$$A = 2\,B,\ B = \frac{9}{2}C,\ D = 2C,\ E = 2D,\ A > E > C$$

or $\quad A > B > E > D > C$

6. (c) C **7.** (*a*) A, B **8.** (*b*) D, C
9. (*a*) A **10.** (*a*) A, B, E, D, C
11. (c)



After interchanging the places.



Total number of people in the row = 11 + 9 − 1 = 19

Solutions (Q. Nos. 12-15)

According to the question,
Sunita > Seema and Renu
Radha and Gauri > Renu
Sunita > Bina > Radha
Sunita (not tallest)
Renu (not shortest)
On arranging the above data, we get
∴ Gauri > Sunita > Bina > Radha > Renu > Seema

12. (c) Gauri is tallest among them.

13. (*d*) Seema is shortest.

14. (c) Third

15. (*a*) Bina occupies the third position from the top.

Solutions (Q. Nos. 16-19)

According to the quesion, P > Q, S > R
T is least effective. Q = R, S > Q
∴ S/P > Q = R > T

16. (*d*) R was less effective than p.

17. (*d*) Statement V is not required.

18. (*b*) It is clear from the ranking order so obtained that brand S may be less effective than P, equal to P or more effective than P. It means that position of S is not fixed. Now as per question, sixth brand *i.e.,* M is more effective than S which implies that whatever be the position of S, there will be atleast four brands which will be less effective than M.

19. (*a*) Now, it is given that P is less expensive than R and from the order, P is more effective than R. It means that P should be purchased as it is more effective and less expensive than R.

Solutions (Q. Nos. 20-25) *The compounds can be arranged according to their taste and effectiveness as shown below.*

Taste (sweet) $Z > U > V > Y > X > W$

Effectiveness (deadly) $X > Y > U > W > Z > V$

20. (*d*) From the above taste (sweet) ranking, we find that Z is the sweetest.

21. (*d*) It is clear that both Z and U are sweeter and more deadly than V.

22. (*d*) Statement V does not add any new information about the sweetness of drugs.

23. (*a*) Compound U is sweeter than Y and more deadly than W.

24. (*b*) Compound V is the least deadly.

25. (*d*) Compound 'X' is the most deadly.

26. (*d*) On the basis of given information,

Order of ranking of height in the question is of variable nature as it cannot be established whether Harish is taller than Suresh or not.

So, it cannot be determined who is the shortest.

27. (*a*) Descending order of the heights is as

Roshan > Sushil > Hardik > Niza > Harry.

Therefore, the tallest person is Roshan.

28. (*a*) Descending order of the heights is as

Raju > Vasant > Manohar > Jayant > Dutta

Hence, Raju is the tallest.

29. (*d*) Gita > Mita ; Bhanu > Gita

∴ Bhanu > Gita > Mita

30. (*c*) Given, Siya > Priya > Tiya ...(i)

Siya > Riya > Priya ...(ii)

and Riya > Tiya > Diya ...(iii)

On combining Eqs. (i), (ii) and (iii), we get

Siya > Riya > Priya > Tiya > Diya

31. (*d*) Arrangement of heights in descending order

Bibek > Charu > Anil > Eswar > Debu

Arrangement of weights in descending order

Bibek > Anil > Debu > Charu > Eswar

32. (*b*) From the given conditions, data is arranged as

Suma > Kavita > Sudha > Mamta > Puja

Hence, Puja scored lowest in the examination.

33. (*b*) All the books are arranged as follows

C
D
A
E
B

Hence, book at the bottom is B.

34. (*d*) The total number of students cannot be determined because the ranks of Sairam from top and bottom is given for different subjects. So, the given information is not sufficient. Hence, option (d) is correct.

35. (*c*)

According to	Birthday Date
Mohit	...,⑱
Mohit's Sister	⑱, 19

Here, 18 is common to both. Hence, the correct date is 18th.

36. (*d*) Dilip is 10th from the left and the same position is occupied by Jagdish after interchanging takes place and he becomes 23rd from the right.

Therefore, total number of students in the row

$= (10 + 23) - 1 = 32$

37. (*c*) Position of Rekha is 20th from the right which is occupied by Jaya after interchanging takes place and Jaya becomes 22nd from the left. Therefore, total number of students in the row $= (20 + 22) - 1 = 41$

38. (*d*) Her brother's birthday is on 17th of February as 17th February is common to both the groups of dates.

39. (*c*) From among those who passed Neeta is 22nd from the top and Kalyan is $22 + 5 = 27$th from the top and 34th from the bottom. Therefore, total number of students who passed the examination $= 27 + 34 - 1 = 60.$

Therefore, total number of students in the class

$$= \frac{60}{4} \times 5 = 75$$

40. (*c*)

According to	Leave Date
Seema	22, 23, 24, 25, 26

But Seema was present on 23rd. Also, it was holiday on 24th and 26th October was Sunday. Hence, possible date may be either 22nd or 25th October.

41. (*c*) $T > R > S, S > P \Rightarrow T > R > S > P$

But information about Q is not given. Hence, either T or Q is the heaviest.

42. (*d*) Out of all the given options, only the ranking given in (d) satisfies the given conditions.

B – 12000 (A won less money than B)

A – 10000

E – 8000 (E won ₹ 8000 prize)

D – 6000

C – 4000 and the difference between winning of C and F was ₹ 2000.

F – 2000 and the difference between winning of D and F was atleast ₹ 4000.

43. (*c*) If A won ₹ 4000, then the only possible ranking is

C – 12000, F – 10000

E – 8000, B – 6000

A – 4000, D – 2000

The total of C and F = 12000 + 10000 = ₹ 22000.

44. (*d*) According to the question,

Rama > Rani, Rani < Ratna, Ratna > Rama

and Ratna > Padma > Rama

On arranging the above data, we get

∴ Ratna > Padma > Rama > Rani

So, Ratna scored the highest.

9

Mathematical Operation

Mathematical operation can be defined as the simplification of expression containing numbers and different mathematical signs.

Different types of questions covered in this chapter are as follows

- Symbol Substitution
- Interchange of Signs and Numbers
- Find the Resultant Number in a Row
- Coded Inequalities
- Balancing the Equation
- Trick Based Mathematical Operations
- Simple Inequalities

Under this segment of reasoning, the four mathematical operations *viz.* addition, subtraction, multiplication and division as well as signs such as 'less than', 'greater than', 'equal to', 'not equal to' are represented by unusual symbols. You may say such symbols as artificial ones. The candidate is required to substitute the real signs in place of artificial symbols to solve the questions.

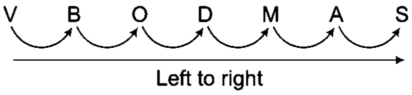
First of all a candidate is required to become familiar with all type of signs that are used for mathematical operations.

A list of these signs is given as follows

(i)	Addition	+	(vii)	Curly bracket	{ }
(ii)	Subtraction	–	(viii)	Square bracket	[ ]
(iii)	Multiplication	×	(ix)	Bar bracket/Vinculum	–
(iv)	Division	÷	(x)	Greater than	>
(v)	Of	Of	(xi)	Less than	<
(vi)	Circular bracket	( )	(xii)	Equal to	=

VBODMAS Rule

While simplifying a mathematical problem, one must follow 'VBODMAS' rule. Infact, this rule gives us the correct order, in which various operations regarding simplification are to be performed. Order of various operations is as same as the order of letters in the 'VBODMAS' from left to right.



Clearly, the order will be as follows

***Step* I** V (—) 'Viniculum' bracket is solved.

***Step* II** B Brackets are to be solved in the order given below.

- (i) ( ) or small/circular bracket
- (ii) { } or middle/curly bracket
- (iii) [ ] or large/square bracket

***Step* III** O (Of) Operation of 'of' is done.

***Step* IV** D (÷) Operation of 'division' (÷) is done.

***Step* V** M (×) Operation of 'multiplication' (×).

***Step* VI** A (+) Operation of 'addition' (+) is done.

***Step* VII** S (–) Operation of 'subtraction' (–) is done.

Mathematical operations can be divided into two sections based on the type of questions asked

Section **I** Simple Mathematical Operations Section **II** Inequalities

Section I. Simple Mathematical Operations

The questions of this section are based on simple mathematical operations of +, –, × and ÷ after substitution/interchange of signs and numbers, Balancing of equations, trick based mathematical operations etc. A wide variety of questions based on simple mathematical operations are asked in various competitive exams.

Based on their diverse nature, we have classified these simple mathematical operations into several types as given below

Type 1 Symbol Substitution

In this type of questions, a candidate is provided with substitutes for various mathematical symbols, followed by a question involving calculation of an expression or choosing the correct/incorrect equation.The candidate is required to put in the real signs in the given equation and then solve the questions as required.

***Ex* 1** If '×' means '–', '÷' means '+', + means '×', then 18 × 5 ÷ 5 + 6 is equal to

(a) 58 (b) 49 (c) 43 (d) 37

Sol. (c) Change of symbols according to the question,

$$? = 18 \underset{\substack{\downarrow\\ -}}{\times} 5 \underset{\substack{\downarrow\\ +}}{\div} 5 \underset{\substack{\downarrow\\ \times}}{+} 6 = 18 - 5 + 5 \times 6$$ (using VBODMAS rule)

$$= 18 - 5 + 30 = (18 + 30) - 5 = 43$$

***Ex* 2** If '–' means '+', '+' means '–', '×' means '÷' and '÷' means '×', then which of the following equation is correct? **[SSC (CGL) 2010]**

(a) 30 – 5 + 4 ÷ 10 × 5 = 62 (b) 30 + 5 ÷ 4 – 10 × 5 = 22

(c) 30 + 5 – 4 ÷ 10 × 5 = 28 (d) 30 × 5 – 4 ÷ 10 + 5 = 41

Sol. (d) Let us check all the options one by one.

From option (a), $$\text{LHS} = 30 \underset{\substack{\downarrow\\ +}}{-} 5 \underset{\substack{\downarrow\\ -}}{+} 4 \underset{\substack{\downarrow\\ \times}}{\div} 10 \underset{\substack{\downarrow\\ \div}}{\times} 5$$ (using VBODMAS rule)

$$= 30 + 5 - 4 \times 10 \div 5$$

$$= 30 + 5 - 4 \times 2 = 30 + 5 - 8$$

$$= 35 - 8 = 27 \text{ and RHS} = 62$$

$\therefore$ LHS $\neq$ RHS

From option (b), $\text{LHS} = 30 \underset{\underset{-}{\downarrow}}{+} 5 \underset{\underset{\times}{\downarrow}}{\div} 4 \underset{\underset{+}{\downarrow}}{-} 10 \underset{\underset{\div}{\downarrow}}{\times} 5$

$= 30 - 5 \times 4 + 10 \div 5$ (using VBODMAS rule)

$= 30 - 5 \times 4 + 2 = 30 - 20 + 2$

$= (30 + 2) - 20 = 12$ and $\text{RHS} = 22$

$\therefore$ $\text{LHS} \neq \text{RHS}$

From option (c), $\text{LHS} = 30 \underset{\underset{-}{\downarrow}}{+} 5 \underset{\underset{+}{\downarrow}}{-} 4 \underset{\underset{\times}{\downarrow}}{\div} 10 \underset{\underset{\div}{\downarrow}}{\times} 5$

$= 30 - 5 + 4 \times 10 \div 5$ (using VBODMAS rule)

$= 30 - 5 + 4 \times 2 = 30 - 5 + 8$

$= (30 + 8) - 5 = 33$ and $\text{RHS} = 28$

$\therefore$ $\text{LHS} \neq \text{RHS}$

From option (d), $\text{LHS} = 30 \underset{\underset{\div}{\downarrow}}{\times} 5 \underset{\underset{+}{\downarrow}}{-} 4 \underset{\underset{\times}{\downarrow}}{\div} 10 \underset{\underset{-}{\downarrow}}{+} 5$

$= 30 \div 5 + 4 \times 10 - 5 = 6 + 4 \times 10 - 5$

$= 6 + 40 - 5$ (using VBODMAS rule)

$= (6 + 40) - 5 = 41 = \text{RHS}$

$\therefore$ $\text{LHS} = \text{RHS}$

Hecne, option (d) is the correct answer.

***Ex* 3** If A means '÷', B means '–', C means '×', then find the value of following equation.

$$46 \text{ A } 2 \text{ B } 3 \text{ C } 4 = ?$$

(a) 34 (b) 23 (c) 17 (d) 11

Sol. (*d*) According to the question,

$? = 46 \underset{\underset{\div}{\downarrow}}{\text{A}} 2 \underset{\underset{-}{\downarrow}}{\text{B}} 3 \underset{\underset{\times}{\downarrow}}{\text{C}} 4$

$\Rightarrow$ $? = 46 \div 2 - 3 \times 4$ (using VBODMAS rule)

$= 23 - 3 \times 4 = 23 - 12 = 11$

***Ex* 4** If '+' means '×', '–' means '÷', '÷' means '+' and '×' means '–', then what will be the value of

$$16 \div 64 - 4 \times 4 + 3 = ?$$

[CMAT 2013]

(a) 20 (b) 52 (c) 15 (d) 12

Sol. (*a*) According to the question,

$$16 \underset{\underset{+}{\downarrow}}{\div} 64 \underset{\underset{\div}{\downarrow}}{-} 4 \underset{\underset{-}{\downarrow}}{\times} 4 \underset{\underset{\times}{\downarrow}}{+} 3 = ?$$

So, $16 + 64 \div 4 - 4 \times 3 = ?$ (using VBODMAS rule)

$\Rightarrow$ $16 + 16 - 4 \times 3 = ?$

$\Rightarrow$ $16 + 16 - 12 = ?$

$\Rightarrow$ $32 - 12 = ?$

$\therefore$ $? = 20$

Practice Corner **9.1**

Build your Confidence...

1. If '+' means '÷', '÷' means '–', '–' means '×' and '×' means '+', then $12 + 6 \div 3 - 2 \times 8 = ?$

(a) – 2 (b) 4 (c) 2 (d) 8

2. If '×' stands for '+', ÷ stands for '–', '–' stands for '×' and '+' stands for '÷', then find the value of following equation.

$54 \div 16 - 3 \times 6 + 2 = ?$ **[UP B.Ed. 2010]**

(a) 9 (b) 12 (c) 8 (d) 15

3. If '×' means subtraction, '+' means multiplication and '–' means addition, then find the value of following equation.

$12 + (3 \times 1) + 4 - 1 = ?$ **[UP B.Ed. 2012]**

(a) 98 (b) 75 (c) 85 (d) 97

4. If '–' denotes addition, '+' denotes subtraction, '×' denotes division and ÷ denotes multiplication, then

$7 - 10 \times 5 \div 6 + 4 = ?$ **[SSC (CPO) 2008]**

(a) 3 (b) 12 (c) 15 (d) 9

5. If '+' means 'minus', '–', means 'multiply', '÷' means 'plus' and '×' means 'divide', then

$10 \times 5 \div 3 - 2 + 3 = ?$ **[SSC (10+2) 2013]**

(a) 5 (b) $\frac{53}{3}$ (c) 21 (d) 36

6. If A means '+', B means '–' C means '×' and D means ÷, then

18 C 14 A 6 B 16 D 4 = ? **[CBI (PO) 2011]**

(a) 254 (b) 238 (c) 188 (d) 258

(e) None of these

7. If A means '×' B means '÷' C means '–' and D means '+', then

4 D 16 A 5 B 8 C 5 = ? **[CBI (Clerk) 2010]**

(a) 9 (b) 16 (c) 13 (d) 7.5

(e) None of these

8. If '÷' means addition and '×' means subtraction, then $(15 \times 9) \div (12 \times 4) \times (4 \div 4)$ is equal to **[SSC (10+2) 2008]**

(a) 96 (b) 6 (c) 3/128 (d) 143/8

9. If A means '–', B means '÷', C means '+' and D means '×', then 15 B 3 C 24 A 12 D 2 = ? **[IBPS (PO) 2011]**

(a) 3 (b) 5 (c) 7 (d) 9

(e) None of these

10. If '+' means '–', '÷' means '+', '–' means '×' and '×' means '÷', then which of the following equation is correct?

(a) $40 - 10 + 10 \times 5 = 92$ (b) $265 + 11 - 2 \times 14 = 22$

(c) $66 \times 3 - 11 + 12 = 230$ (d) $2 - 14 \times 4 \div 11 = 16$

11. If '+' means subtraction, '÷' means addition, '–' means multiplication and '×' means division, then which of the following equation is correct?

(a) $56 + 12 \times 34 - 12 = 102$ (b) $8 \div 44 - 5 + 25 = 203$

(c) $112 \times 44 - 12 + 10 = 46$ (d) $9 \div 64 - 2 \times 6 = 54$

12. If A = '+', B = '–', C = '×' and D = '÷', then 5 C 5 D 5 A 5 B 5 = ? **[UP B.Ed. 2012]**

(a) 0 (b) 5 (c) 10 (d) 15

13. If A = '+', B = '–', C = '×' and D = '÷', then which of the following equations is correct?

(a) 8 A 8 B 8 C 8 = – 48

(b) 3 A 3 B 3 C 3 A 3 D 3 = 41

(c) 9 C 9 B 9 D A 9 = 17

(d) 8 B 6 D A 4 C 3 = 15

14. If > denotes +, < denotes –, + denotes ÷, ^ denotes ×, – denotes =, × denotes > and = denotes <, choose the correct statement of the following **[SSC (CGL) April 2014]**

(a) $28 + 4 \wedge 2 = 6 \wedge 4 + 2$

(b) $13 > 7 < 6 + 2 = 3 \wedge 4$

(c) $9 > 5 > 4 - 18 + 9 > 16$

(d) $9 < 3 < 2 > 1 \times 8 \wedge 2$

15. If 'T' means (×), 'U' means (–), 'X' means (÷) and W means (+), then what will be the value of the following expression.

(50 X 2) W (28 T 4) **[SSC (Steno) 2011]**

(a) 142 (b) 158

(c) 137 (d) 163

16. If '–' stands for 'addition', '÷' for 'multiplication', '×' for 'subtraction' and '+' for 'division', then which of the following is correct? **[SSC (CGL) 2013]**

(a) $25 \times 12 - 14 \div 4 + 6 = 16$

(b) $25 - 12 + 14 \div 2 \times 4 = 15$

(c) $25 - 15 + 5 \div 4 \times 16 = 21$

(d) $25 + 11 - 4 \div 10 \times 6 = 20$

Directions (Q. Nos. 17-19) Study the following information carefully and answer the given questions. If '+' is coded as 'π', '×' is coded as '≠', '÷' is coded as '\$' and '−' is coded as 'Δ', then what is the value of the following?

17. $2 \neq 7 \, \Delta \, 4$

(a) 9 (b) 3 (c) 13 (d) 10

18. $72 \, \pi \, 27 \, \Delta \, 99$

(a) 65 (b) 52 (c) 47 (d) 0

19. $17 \neq 12 \, \$ \, 3$

(a) 98 (b) 87 (c) 75 (d) 68

20. If A means '−', B means '+', C means '×', and D means '÷', then 32 D 4 B 7 C 2 A 6 **[OBC (Clerk) 2011]**

(a) 18 (b) 24 (c) 36 (d) 16
(e) 14

21. If K denotes '×', 'B' denotes '÷', 'T' denotes '−' and 'M' denotes '+', then 40 B 8 T 6 M 3 K 4 = ? **[PNB (Clerk) 2010]**

(a) 19 (b) 11
(c) – 31 (d) 23
(e) None of these

22. If S means '−', Q means '×', R means '÷' and P means '+', then 1 P 45 R 2 Q 2 S 4 = ? **[Allahabad Bank (Clerk) 2010]**

(a) 40 (b) 42
(c) 36 (d) 46
(e) 38

23. If '@' means '×', 'c' means '÷', % means (+) and '\$ 'means '−', then 6%12C3@8 \$ 3 = ? **[Vijaya Bank (Clerk) 2010]**

(a) 37 (b) 35 (c) 39 (d) 33
(e) None of these

24. If '−' stands for division '+' stands for subtraction '÷ stands for multiplication '×' stands for addition, then which one of the following equations is correct? **[SSC (CGL) 2011]**

(a) $70 - 2 + 4 \div 5 \times 6 = 44$ (b) $70 - 2 + 4 \div 5 \times 6 = 21$
(c) $70 - 2 + 4 \div 5 \times 6 = 341$ (d) $70 - 2 + 4 \div 5 \times 6 = 36$

25. If '−' stands for division, '+' for multiplication, '÷ ' for subtraction and '×' for addition, then which one of the following equations is correct? **[SSC (CGL) 2011]**

(a) $19 + 5 - 4 \times 2 \div 4 = 11$ (b) $19 \times 5 - 4 \div 2 + 4 = 16$
(c) $19 \div 5 + 4 - 2 \times 4 = 13$ (d) $19 \div 5 + 4 - 2 \div 4 = 20$

26. If '−' stands for '÷ ' '+' stands for '×', '÷' for '−' for '×' for '+', which one of the following equations in correct? **[SSC (CGL) 2011]**

(a) $30 - 6 + 5 \times 4 \div 2 = 27$ (b) $30 + 6 - 5 \div 4 \times 2 = 30$
(c) $30 \times 6 \div 5 - 4 + 2 = 32$ (d) $30 \div 6 \times 5 + 4 - 2 = 40$

27. If '÷' means '−', '−' means '×', '×' means '+' and '+' means '÷', then $20 \times 60 \div 40 - 20 + 10 = ?$

(a) 80 (b) 60 (c) 40 (d) 0

Response & Interpretations **(9.1)**

1. (*b*) According to the question,

$$? = 12 \underset{\div}{\underset{\downarrow}{+}} 6 \underset{-}{\underset{\downarrow}{\div}} 3 \underset{\times}{\underset{\downarrow}{-}} 2 \underset{+}{\underset{\downarrow}{\times}} 8$$

$= 12 \div 6 - 3 \times 2 + 8$ (using VBODMAS rule)

$= 2 - 3 \times 2 + 8 = 2 - 6 + 8$

$= (2 + 8) - 6 = 4$

2. (*a*) According to the question,

$$? = 54 \underset{-}{\underset{\downarrow}{\div}} 16 \underset{\times}{\underset{\downarrow}{-}} 3 \underset{+}{\underset{\downarrow}{\times}} 6 \underset{\div}{\underset{\downarrow}{+}} 2$$

$= 54 - 16 \times 3 + 6 \div 2$ (using VBODMAS rule)

$= 54 - 16 \times 3 + 3$

$= 54 - 48 + 3$

$= 6 + 3 = 9$

3. (*d*) According to the question,

$$? = 12 \underset{\times}{\underset{\downarrow}{+}} (3 \underset{-}{\underset{\downarrow}{\times}} 1) \underset{\times}{\underset{\downarrow}{+}} 4 \underset{+}{\underset{\downarrow}{-}} 1$$

$= 12 \times (3 - 1) \times 4 + 1$ (using VBODMAS rule)

$= 12 \times 2 \times 4 + 1 = 96 + 1 = 97$

4. (*c*) According to the question,

$$? = 7 \underset{+}{\underset{\downarrow}{-}} 10 \underset{\div}{\underset{\downarrow}{\times}} 5 \underset{\times}{\underset{\downarrow}{\div}} 6 \underset{-}{\underset{\downarrow}{+}} 4$$

$= 7 + 10 \div 5 \times 6 - 4$ (using VBODMAS rule)

$= 7 + 2 \times 6 - 4 = (7 + 12) - 4 = 15$

5. (*a*) $? = 10 \times 5 \div 3 - 2 + 3$ (using VBODMAS rule)

$= 10 \div 5 + 3 \times 2 - 3$

$= 2 + 3 \times 2 - 3 = 2 + 6 - 3 = 8 - 3 = 5$

6. (*a*) According to the question,

$$? = 18 \underset{\times}{\underset{\downarrow}{C}} 14 \underset{+}{\underset{\downarrow}{A}} 6 \underset{-}{\underset{\downarrow}{B}} 16 \underset{\div}{\underset{\downarrow}{D}} 4$$

$= 18 \times 14 + 6 - 16 \div 4$ (using VBODMAS rule)

$= 18 \times 14 + 6 - 4 = 252 + 6 - 4 = 258 - 4 = 254$

7. (*a*) According to the question,

$$? = 4 \underset{+}{\underset{\downarrow}{D}} 16 \underset{\times}{\underset{\downarrow}{A}} 5 \underset{\div}{\underset{\downarrow}{B}} 8 \underset{-}{\underset{\downarrow}{C}} 5$$

$= 4 + 16 \times 5 \div 8 - 5$ (using VBODMAS rule)

$= 4 + 16 \times 0.625 - 5 = 4 + 10 - 5 = 14 - 5 = 9$

8. (*b*) According to the question,

Required answer $= (15 \times 9) \underset{\underset{+}{\downarrow}}{\div} (12 \times 4) \underset{\underset{-}{\downarrow}}{\times} (4 \div 4)$, with the operators inside the brackets changed as $\underset{\underset{-}{\downarrow}}{\times}$, $\underset{\underset{-}{\downarrow}}{\times}$, $\underset{\underset{+}{\downarrow}}{\div}$:

$$(15 \underset{\underset{-}{\downarrow}}{\times} 9) \underset{\underset{+}{\downarrow}}{\div} (12 \underset{\underset{-}{\downarrow}}{\times} 4) \underset{\underset{-}{\downarrow}}{\times} (4 \underset{\underset{+}{\downarrow}}{\div} 4)$$

$= (15 - 9) + (12 - 4) - (4 + 4)$ (using VBODMAS rule)

$= 6 + 8 - 8 = 6$

9. (*b*) According to the question,

$$? = 15 \underset{\underset{\div}{\downarrow}}{B} 3 \underset{\underset{+}{\downarrow}}{C} 24 \underset{\underset{-}{\downarrow}}{A} 12 \underset{\underset{\times}{\downarrow}}{D} 2$$

$= 15 \div 3 + 24 - 12 \times 2$

$= 5 + 24 - 12 \times 2 = 5 + 24 - 24 = 5$ (using VBODMAS rule)

10. (*c*) Let us check all the options one by one.

From option (a),

$$40 \underset{\underset{\times}{\downarrow}}{-} 10 \underset{\underset{-}{\downarrow}}{+} 10 \underset{\underset{\div}{\downarrow}}{\times} 5 = 92$$

$\Rightarrow \quad 40 \times 10 - 10 \div 5 = 92$ (using VBODMAS rule)

$\Rightarrow \quad 40 \times 10 - 2 = 92$

$\Rightarrow \quad 400 - 2 = 92 \quad \Rightarrow \quad 398 = 92$

$\therefore \quad \text{LHS} \neq \text{RHS}$

Hence, option (a) is incorrect.

From option (b),

$$265 \underset{\underset{-}{\downarrow}}{+} 11 \underset{\underset{\times}{\downarrow}}{-} 2 \underset{\underset{\div}{\downarrow}}{\times} 14 = 22$$

$\Rightarrow \quad 265 - 11 \times 2 \div 14 = 22$

$\Rightarrow \quad 265 - 11 \times \frac{2}{14} = 22$ (using VBODMAS rule)

$\Rightarrow \quad 265 - \frac{11}{7} = 22 \quad \Rightarrow \quad \frac{1855 - 11}{7} = 22$

$\Rightarrow \quad \frac{1844}{7} = 22 \quad \Rightarrow \quad \text{LHS} \neq \text{RHS}$

Hence, option (b) is incorrect.

From option (c),

$$66 \underset{\underset{\div}{\downarrow}}{\times} 3 \underset{\underset{\times}{\downarrow}}{-} 11 \underset{\underset{-}{\downarrow}}{+} 12 = 230$$

$\Rightarrow \quad 66 \div 3 \times 11 - 12 = 230$

$\Rightarrow \quad 22 \times 11 - 12 = 230$ (using VBODMAS rule)

$\Rightarrow \quad 242 - 12 = 230$

$\Rightarrow \quad 230 = 230$

$\therefore \quad \text{LHS} = \text{RHS}$

Hence, option (c) is correct.

As, we have got option (c) as our answer, there is no need to check option (d).

11. (*b*) Let us check all the options one by one.

From option (a),

$$56 \underset{\underset{-}{\downarrow}}{+} 12 \underset{\underset{\div}{\downarrow}}{\times} 34 \underset{\underset{\times}{\downarrow}}{-} 12 = 102$$

$\Rightarrow \quad 56 - 12 \div 34 \times 12 = 102$

$\Rightarrow \quad 56 - \frac{12}{34} \times 12 = 102$ (using VBODMAS rule)

$\Rightarrow \quad 56 - \frac{72}{17} = 102 \quad \Rightarrow \quad \frac{952 - 72}{17} = 102$

$\Rightarrow \quad \frac{880}{17} = 102$

$\therefore \quad \text{LHS} \neq \text{RHS}$

Hence, option (a) is incorrect.

From option (b),

$$8 \underset{\underset{+}{\downarrow}}{\div} 44 \underset{\underset{\times}{\downarrow}}{-} 5 \underset{\underset{-}{\downarrow}}{+} 25 = 203$$

$\Rightarrow \quad 8 + 44 \times 5 - 25 = 203 \quad \Rightarrow \quad 8 + 220 - 25 = 203$

$\Rightarrow \quad 228 - 25 = 203 \quad \Rightarrow \quad 203 = 203$

$\therefore \quad \text{LHS} = \text{RHS}$

So, option (b) is correct and there is no need to check remaining options.

12. (*b*) According to the question,

$$? = 5 \underset{\underset{\times}{\downarrow}}{C} 5 \underset{\underset{\div}{\downarrow}}{D} 5 \underset{\underset{+}{\downarrow}}{A} 5 \underset{\underset{-}{\downarrow}}{B} 5$$

$= 5 \times 5 \div 5 + 5 - 5$ (using VBODMAS rule)

$= 5 \times 1 + 5 - 5 = 10 - 5 = 5$

13. (*a*) Let us check all the options one by one.

From option (a),

$$8 \underset{\underset{+}{\downarrow}}{A} 8 \underset{\underset{-}{\downarrow}}{B} 8 \underset{\underset{\times}{\downarrow}}{C} 8 = -48$$

$\Rightarrow \quad 8 + 8 - 8 \times 8 = -48$

$\Rightarrow \quad 8 + 8 - 64 = -48$ (using VBODMAS rule)

$\Rightarrow \quad 16 - 64 = -48 \quad \Rightarrow \quad -48 = -48$

$\therefore \quad \text{LHS} = \text{RHS}$

So, option (a) is correct and there is no need to check remaining options.

14. (*c*) From option (c),

$9 > 5 > 4 - 18 + 9 > 16$

By interchanging the signs,

$9 + 5 + 4 = 18 \div 9 + 16 \quad \Rightarrow \quad 18 = 18$

Thus, option (c) is correct.

15. (*c*) Given expression, (50 X 2) W (28 T 4)

After interchanging the letters with symbols, we get

$(50 \div 2) + (28 \times 4) = 25 + 112 = 137$

16. (*c*) Let us check all the options one by one.

From option (a),

$$25 \underset{\underset{-}{\downarrow}}{\times} 12 \underset{\underset{+}{\downarrow}}{-} 14 \underset{\underset{\times}{\downarrow}}{\div} 14 \underset{\underset{\div}{\downarrow}}{+} 6 = 16$$

$\Rightarrow \quad 25 - 12 + 14 \times 4 \div 6 = 16$ (using VBODMAS rule)

$\Rightarrow \quad 25 - 12 + 14 \times \frac{4}{6} = 16$

$\Rightarrow \quad 25 - 12 + \frac{28}{3} = 16 \quad \Rightarrow \quad \frac{75 - 36 + 28}{3} = 16$

$$\Rightarrow \quad \frac{103-36}{3} = 16 \quad \Rightarrow \quad \frac{67}{3} = 16$$

$$\therefore \quad \text{LHS} \neq \text{RHS}$$

So, option (a) is incorrect.

From option (b),

$$25 \underset{\underset{+}{\downarrow}}{-} 12 \underset{\underset{\div}{\downarrow}}{+} 14 \underset{\underset{\times}{\downarrow}}{\div} 2 \underset{\underset{-}{\downarrow}}{\times} 4 = 15$$

$$\Rightarrow \quad 25 + 12 \div 14 \times 2 - 4 = 15 \quad \text{(using VBODMAS rule)}$$

$$\Rightarrow \quad 25 + \frac{12}{14} \times 2 - 4 = 15$$

$$\Rightarrow \quad 25 + \frac{12}{7} - 4 = 15 \quad \Rightarrow \quad \frac{175 + 12 - 28}{7} = 15$$

$$\Rightarrow \quad \frac{187 - 28}{7} = 15 \quad \Rightarrow \quad \frac{159}{7} = 15$$

$$\therefore \quad \text{LHS} \neq \text{RHS}$$

So, option (b) is incorrect.

From option (c),

$$25 + 15 \div 5 \times 4 - 16 = 21 \quad \text{(using VBODMAS rule)}$$

$$\Rightarrow \quad 25 + 3 \times 4 - 16 = 21$$

$$\Rightarrow \quad 25 + 12 - 16 = 21$$

$$\Rightarrow \quad 37 - 16 = 21 \quad \Rightarrow \quad 21 = 21$$

$$\Rightarrow \quad \text{LHS} = \text{RHS}$$

So, option (c) is correct and there is no need to check option (d).

17. (*d*) Given, $2 \neq 7 \,\Delta\, 4$

After interchanging the signs,

$$2 \times 7 - 4 = 14 - 4 = 10$$

18. (*d*) Given, $72 \;\pi\; 27 \,\Delta\, 99$

After interchanging the signs,

$$72 + 27 - 99 = 99 - 99 = 0$$

19. (*d*) Given, $17 \neq 12 \;\$\; 3$

After interchanging the signs,

$$17 \times 12 \div 3 = 17 \times 4 = 68$$

20. (*d*) 32 D4 B7 C2 A6

$$= 32 \div 4 + 7 \times 2 - 6 = 8 + 7 \times 2 - 6$$

$$= 8 + 14 - 6 = 22 - 6 = 16$$

21. (*b*) $\because \quad 40 \text{ B } 8 \text{ T } 6 \text{ M } 3 \text{ K } 4 = ?$

$$\Rightarrow \quad 40 \div 8 - 6 + 3 \times 4 = ?$$

$$\Rightarrow \quad 5 - 6 + 12 = ? \quad \Rightarrow \quad 17 - 6 = ?$$

$$\therefore \quad ? = 11$$

22. (*b*) 1 P4 5R 2 Q 2 S 4 $= 1 + 45 \div 2 \times 2 - 4$

$$= 1 + 22.5 \times 2 - 4 = 1 + 45 - 4 = 42$$

23. (*b*) $\because \quad 6 \,\%\, 12 \text{ © } 3 \text{ @ } 8 \;\$\; 3 = ?$

$$\Rightarrow \quad 6 + 12 \div 3 \times 8 - 3 = ?$$

$$\Rightarrow \quad 6 + 4 \times 8 - 3 = ?$$

$$\Rightarrow \quad 6 + 32 - 3 = ?$$

$$\Rightarrow \quad 38 - 3 = ?$$

$$\therefore \quad ? = 35$$

24. (*b*)

− ⇒ ÷	+ ⇒ ×
÷ ⇒ ×	− ⇒ +

From option (a),

$$70 - 2 + 4 \div 5 \times 6 = 44$$

$$\Rightarrow \quad 70 \div 2 - 4 \times 5 + 6 = 44$$

$$\Rightarrow \quad 35 - 20 + 6 \neq 44$$

From option (b),

$$70 - 2 + 4 \div 5 \times 6 = 21$$

$$\Rightarrow \quad 70 \div 2 - 4 \times 5 + 6 = 21$$

$$\Rightarrow \quad 35 - 20 + 6 = 21$$

$$\Rightarrow \quad 41 - 20 = 21$$

$$\therefore \quad 21 = 21$$

25. (*c*)

− ⇒ ÷	+ ⇒ ×
÷ ⇒ −	− ⇒ +

From option (a),

$$19 + 5 - 4 \times 2 \div 4 = 11$$

$$\Rightarrow \quad 19 \times 5 \div 4 + 2 - 4 = 11$$

$$\Rightarrow \quad \frac{95}{4} + 2 - 4 \neq 11$$

From option (b),

$$19 \times 5 - 4 \div 2 + 4 = 16$$

$$\Rightarrow \quad 19 + 5 \div 4 - 2 \times 4 = 16$$

$$\Rightarrow \quad 19 + \frac{5}{4} - 8 \neq 16$$

From option (c),

$$19 \div 5 + 4 - 2 \times 4 = 13$$

$$\Rightarrow \quad 19 - 5 \times 4 \div 2 + 4 = 13$$

$$\Rightarrow \quad 19 - 5 \times 2 + 4 = 13$$

$$\Rightarrow \quad 19 - 10 + 4 = 13$$

$$\therefore \quad 13 = 13$$

26. (*a*)

− ⇒ ÷	+ ⇒ ×
÷ ⇒ −	× ⇒ +

From option (a),

$$30 - 6 + 5 \times 4 \div 2 = 27$$

$$\Rightarrow \quad 30 \div 6 \times 5 + 4 - 2 = 27$$

$$\Rightarrow \quad 5 \times 5 + 4 - 2 = 27$$

$$\Rightarrow \quad 25 + 4 - 2 = 27$$

$$\therefore \quad 27 = 27$$

27. (*d*)

÷ ⇒ −	+ ⇒ ×
− ⇒ ×	÷ ⇒ +

$$20 \times 60 \div 40 - 20 + 10 = ?$$

$$\therefore \quad ? = 20 + 60 - 40 \times 20 \div 10$$

$$= 20 + 60 - 40 \times 2$$

$$= 80 - 80 = 0$$

Type 2 Balancing the Equation

In this type of questions, the signs given in one of the alternatives are required to fill up the blank spaces for the signs in order to balance the given equation.

***Ex* 5** If the following equations has to be balance, then the signs of which of the following options will be used?

$$24 \quad 6 \quad 12 \quad 16 = 0$$

(a) –, + and + (b) ÷, + and ÷ (c) –, – and – (d) ÷, + and –

Sol. (*d*) Let us check all the options one-by-one.

From option (a),

$$24 - 6 + 12 + 16 = 0 \Rightarrow (24 + 12 + 16) - 6 = 0 \Rightarrow 52 - 6 = 0 \Rightarrow 46 = 0 \Rightarrow \text{LHS} \neq \text{RHS}$$

Hence, option (a) is incorrect.

From option (b),

$$24 \div 6 + 12 \div 16 = 0 \Rightarrow 4 + 0.75 = 0 \Rightarrow 4.75 = 0 \Rightarrow \text{LHS} \neq \text{RHS}$$

Hence, option (b) is incorrect.

From option (c),

$$24 - 6 - 12 - 16 = 0 \Rightarrow 18 - 12 - 16 = 0 \Rightarrow 6 - 16 = 0 \Rightarrow -10 = 0 \Rightarrow \text{LHS} \neq \text{RHS}$$

Hence, option (c) is incorrect.

From option (d),

$$24 \div 6 + 12 - 16 = 0 \Rightarrow \frac{24}{6} + 12 - 16 = 0 \Rightarrow 4 + 12 - 16 = 0 \Rightarrow 16 - 16 = 0 \Rightarrow 0 = 0 \Rightarrow \text{LHS} = \text{RHS}$$

Hence, option (d) is correct.

Type 3 Interchange of Signs and Numbers

In this type of questions, the given equation becomes correct and fully balanced when either two signs of the equation or both the numbers and the signs of the equation are interchanged. The candidate is required to find the correct pair of signs and numbers from the given alternatives.

***Ex* 6** Which one of the given interchanges in signs would make the given equation correct?

$$10 - 2 + 9 \times 2 \div 4 = 19$$

(a) – and ÷ (b) – and + (c) ÷ and × (d) × and ÷

Sol. (*a*) Let us check the options one-by-one.

From option (*a*),

$$10 \underset{\underset{\div}{\downarrow}}{-} 2 + 9 \times 2 \underset{\underset{-}{\downarrow}}{\div} 4 = 19$$

$$\Rightarrow \quad 10 \div 2 + 9 \times 2 - 4 = 19 \Rightarrow 5 + 9 \times 2 - 4 = 19$$

$$\Rightarrow \quad 5 + 18 - 4 = 19 \Rightarrow 23 - 4 = 19$$

$$\therefore \quad 19 = 19$$

As option (a) gives us the correct answer.

Hence, there is no need to check other options.

***Ex* 7** Which one of the given interchanges in signs and numbers would make the given equation correct?

[SSC (Multitasking) 2011]

$$16 - 8 \times 16 - 2 \div 4 + 3 = 15$$

(a) + and ÷ and 3 and 4 (b) × and – and 16 and 4
(c) – and ÷ and 8 and 2 (d) × and – and 16 and 2

Sol. (c) Let us check all the options one by one.

From option (a),

$$\begin{array}{ccccccccccccc} 16 & - & 8 & \times & 16 & - & 2 & \div & 4 & + & 3 & = & 15 \\ & & & & & & & \downarrow & \downarrow & \downarrow & \downarrow & & \\ & & & & & & & + & 3 & \div & 4 & & \end{array}$$

$\Rightarrow$ $16-8\times16-2+3\div4=15 \Rightarrow 16-8\times16-2+0.75=15$

$\Rightarrow$ $16-128-2+0.75=15 \Rightarrow 16+0.75-130=15 \Rightarrow 16.75-130=15$

$\therefore$ $16.75\neq145$

Hence, option (a) is incorrect.

From option (b),

$$\begin{array}{ccccccccccccc} 16 & - & 8 & \times & 16 & - & 2 & \div & 4 & + & 3 & = & 15 \\ \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow & & & \downarrow & & & & \\ 4 & \times & & - & 4 & \times & & & 16 & & & & \end{array}$$

$\Rightarrow$ $4\times8-4\times2\div16+3=15 \Rightarrow 4\times8-4\times0.125+3=15$

$\Rightarrow$ $32-0.5+3=15 \Rightarrow 35-0.5=15$

$\therefore$ $34.5\neq15$

Hence, option (b) is incorrect.

From option (c),

$$\begin{array}{ccccccccccccc} 16 & - & 8 & \times & 16 & - & 2 & \div & 4 & + & 3 & = & 15 \\ & \downarrow & \downarrow & & & \downarrow & \downarrow & \downarrow & & & & & \\ & \div & 2 & & & \div & 8 & - & & & & & \end{array}$$

$\Rightarrow$ $16\div2\times16\div8-4+3=15 \Rightarrow 8\times2-4+3=15$

$\Rightarrow$ $16-4+3=15 \Rightarrow 19-4=15$

$\therefore$ $15=15$

Hence, option (c) is correct.

As, option (c) gives us the correct answer. Hence, there is no need to check option (d).

Type 4 Trick Based Mathematical Operations

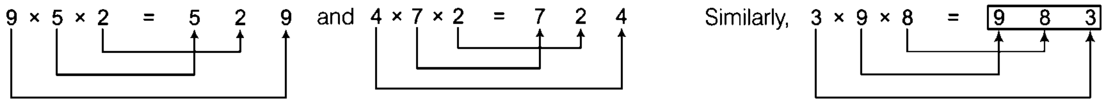
The questions are based on simple mathematical operations that do not come under any of the above given types covered here. These questions can be based on several different patterns.

You will get a better idea about the type of questions from the example as given below

***Ex* 8** If $9\times5\times2=529$ and $4\times7\times2=724$, then $3\times9\times8=?$ **[SSC (CPO) 2012]**

(a) 983 (b) 839 (c) 938 (d) 893

Sol. (*a*) As,



$9\times5\times2=5\ \ 2\ \ 9$ and $4\times7\times2=7\ \ 2\ \ 4$ Similarly, $3\times9\times8=\boxed{9\ \ 8\ \ 3}$

$\therefore$? = 983

***Ex* 9** If 5 ★ 3 = 16, 9 ★ 8 = 73 and 6 ★ 7 = 43, then 7 ★ 8 is equal to

(a) 72 (b) 58 (c) 85 (d) 57

Sol. (*d*) As, 5 ★ 3 = 5 × 3 + 1 = 16, 9 ★ 8 = 9 × 8 + 1 = 73, 6 ★ 7 = 6 × 7 + 1 = 43

Similarly, 7 ★ 8 = 7 × 8 + 1 = 57

***Ex* 10** If $\uparrow = 12$, $\Delta = 15$, $O = 3$ and $\square = 6$, then $\Delta - \uparrow + O = ?$

(a) 0 (b) ↑ (c) Δ (d) □

Sol. (*d*) $\Delta - \uparrow + O = 15 - 12 + 3 = 15 + 3 - 12$

$= 18 - 12 = 6 \Rightarrow \square$ $\therefore\ ? = \square$

***Ex* 11** Find the missing number out of the given options. **[LIC (ADO) 2010]**

$a = 12\,(175)\,15$, $b = 14\,(219)\,16$ and $c = 17\,(?)\,14$

(a) 430 (b) 233 (c) 218 (d) 225

(e) None of these

Sol. (*b*) Here, product of left and right numbers − 5 = (middle number)

As, $a = 12 \times 15 - 5 = 175$, $b = 14 \times 16 - 5 = 219$

Similarly, $c = 17 \times 14 - 5 = 233$

$\therefore\ ? = 233$

***Ex* 12** If 2 = 6, 4 = 12 and 8 = 24, then 10 = ?

(a) 30 (b) 20 (c) 15 (d) 27

Sol. (*a*) As, $2 \times 3 = 6$, $4 \times 3 = 12$, $8 \times 3 = 24$ Similarly, $10 \times 3 = 30$

Practice Corner 9.2

Build your Confidence...

1. Which of the following sets of operation with the usual notations replacing the stars in the order given makes the statements valid?

$\sqrt{100} * \sqrt{16} * \sqrt{225} * \sqrt{1}$ **[SSC (Steno) 2013]**

(a) ×, =, + (b) +, =, − (c) +, =, × (d) −, ×, =

2. Select the correct combination of mathematical signs to replace * signs and to balance the following equation

8 * 8 * 1 * 7 = 8 **[SSC (Multitasking) 2014]**

(a) × ÷ + (b) + ÷ × (c) ÷ × + (d) + × ÷

3. Select the correct combination of mathematical signs to replace '*' signs and to balance the given equation.

24 * 34 * 2 * 5 * 12 **[SSC (10+2) 2013]**

(a) + ÷ × = (b) = ÷ + − (c) = ÷ − + (d) + ÷ = ×

4. Select the correct combination of mathematical signs to replace the * signs and to balance the given equation

40 * 2 * 4 * 3 * 8 **[SSC (CPO) 2013]**

(a) + − ÷ = (b) ÷ + = × (c) + ÷ × = (d) + × − =

Directions (Q. Nos. 5-16) In each of the following questions, all the equations except one have been solved according to a certain rule. You are required to solve the unsolved equation following the same rule and to choose the correct answer out of the given options.

5. If 2463 = 36 and 5552 = 30, then 6732 = ? **[SSC (10+2) 2013]**

(a) 32 (b) 36 (c) 34 (d) 39

6. 2 + 6 + 9 = 926, 1 + 8 + 2 = 218, 4 + 3 + 1 = ? **[UP B.Ed. 2012]**

(a) 314 (b) 341 (c) 143 (d) 431

7. 7 − 4 − 1 = 714, 9 − 2 − 3 = 932, 8 − 0 − 4 = ?

[SSC (Multitasking) 2014]

(a) 804 (b) 840 (c) 408 (d) 480

8. 4 − 4 = 17, 6 − 6 = 37, 2 − 2 = 5, 5 − 5 = ? **[SSC (CGL) 2008]**

(a) 27 (b) 26 (c) 20 (d) 24

9. 4 − 4 = 12, 6 − 6 = 30, 2 − 2 = 2, 8 − 8 = ? **[SSC (DEO) 2008]**

(a) 8 (b) 38

(c) 56 (d) 16

10. 4 × 6 × 2 = 351, 3 × 9 × 8 = 287, 9 × 5 × 6 = ?

[RRB (TC/CC) 2010]

(a) 270 (b) 845 (c) 596 (d) 659

11. 5 × 3 × 9 = 395, 9 × 7 × 5 = 759, 7 × 6 × 4 = ?

[LIC (ADO) 2009]

(a) 676 (b) 476 (c) 647 (d) 764

(e) None of these

12. 4 × 6 × 9 = 694, 5 × 3 × 2 = 325, 7 × 8 × 2 = ?

[SSC (10+2) 2013]

(a) 729 (b) 872 (c) 827 (d) 279

13. 9 * 7 = 32, 13 * 7 = 120, 17 * 9 = 208, 19 * 11 = ?

[SSC (CGL) 2011]

(a) 64 (b) 160 (c) 240 (d) 210

14. If 5 * 6 * 7 = 789, 4 * 2 * 5 = 647, 5 * 1 * 7 = 739, then

3 * 6 * 2 = ?

(a) 584 (b) 484 (c) 251 (d) 473

15. 16 (27) 43, 29 (?) 56, 36 (12) 48 **[SSC (Steno) 2008]**

(a) 23 (b) 33 (c) 27 (d) 37

16. 10 (150) 15, 14 (224) 16, 13 (?) 15

(a) 205
(b) 195
(c) 178
(d) 197

Directions (Q. Nos. 17-21) What should be the correct signs to balance the following equations?

17. 17 − 3 × 6 = 45

(a) ×, = and − (b) −, × and =
(c) =, × and − (d) ×, − and =

18. 3 + 2 × 1 = 7 **[SSC (CPO) 2008]**

(a) ×, +, and = (b) +, × and =
(c) =, × and + (d) ×, = and +

19. 6 5 4 = 34 **[SSC (10+2) 2009]**

(a) − and + (b) × and + (c) ÷ and × (d) × and −

20. 7 4 8 2 = 24 **[SSC (10+2) 2008]**

(a) −, × and × (b) −, × and ÷ (c) ×, − and ÷ (d) ×, ÷ and −

21. 65 40 11 = 36

(a) − and + (b) × and ÷ (c) ÷ and + (d) + and ×

22. Place appropriate mathematical operations in the shaded boxes to get the answer. All calculations are to be performed from left to right. **[SSC (Steno) 2013]**

8	■	4	■	6	■	5	=	60

(a) −, ÷, + (b) ×, ÷, × (c) ×, ÷, − (d) ÷, ×, ×

23. Which sequence of mathematical symbols can replace * in the given equation to balance the equation?

7 * 7 * 2 * 1 = 12 **[RRB (CGL) 2012]**

(a) × − ÷ (b) + − × (c) × − + (d) + × −

24. Given, B = 8, L = 7, O = 5, C = 9 and K = 4. Using the given total, find out the missing symbol in the block. **[SSC (Constable) 2012]**

L	?	K	K	K	=	24

(a) L (b) O
(c) B (d) K

25. Which interchange of signs will make the following equation correct?

(16 − 4) × 6 ÷ 2 + 8 = 30 **[SSC (LDC) 2011]**

(a) ÷ and − (b) + and ×
(c) − and + (d) ÷ and +

26. If 73 + 82 = 14, 91 + 21 = 11, then 86 + 24 = ? **[SSC (Multitasking) 2013]**

(a) 9 (b) 62
(c) 8 (d) 6

27. In the following question, * stands for any of the mathematical signs at different places, which are given as choices under each question. Select the choice with the correct sequence of signs which when substituted makes the question as a correct equation. **[SSC (CGL) 2012]**

24 * 4 * 5 * 4

(a) × + = (b) = × + (c) + × = (d) = + ×

28. Select the correct combination of mathematical signs to replace* signs and to balance the given equation.

16 * 6 * 4 * 24 **[SSC (FCI) 2012]**

(a) ÷ = × (b) × = ÷ (c) = ÷ ÷ (d) × ÷ =

29. Select the correct combination of mathematical signs to replace* signs and to balance the given equation.

9 * 3 * 3 * 3 * 6 **[SSC (Constable) 2013]**

(a) ÷ × − = (b) + − × = (c) − + + = (d) × + − =

30. Select the correct combination of mathematical signs to replace* signs and to balance the given equation.

8 * 6 * 96 * 2 = 0 **[SSC (CGL) 2013]**

(a) × ÷ − (b) × − ÷ (c) − × ÷ (d) ÷ − ×

31. Which of the following interchange of numbers would make the given equation correct? **[SSC (CGL) 2013]**

8 × 20 ÷ 3 + 9 − 5 = 38

(a) 3, 9 (b) 3, 8 (c) 8, 9 (d) 3, 5

32. Which of the following interchange of signs or numbers would make the given equation correct?

(18 ÷ 9) + 3 × 5 = 45

(a) × ÷ (b) + ÷ (c) 18 and 5 (d) 3 and 9

33. Which of the following interchange of signs would make the given equation correct?

5 + 6 ÷ 3 − 12 × 2 = 17 **[SSC (10 +2) 2013]**

(a) ÷ and × (b) + and × (c) + and ÷ (d) + and −

34. Which one of the four interchange in signs and numbers would make the given equation correct?

6 × 4 + 2 = 16

(a) + and ×, and 4 (b) + and ×, 2 and 4
(c) + and ×, 4 and 6 (d) None of these

35. If 264 * 2 = 6, 870 * 3 = 11, then what should 735 * 5 be? **[SSC (CGL) 2013]**

(a) 05 (b) 12 (c) 16 (d) 03

Response & Interpretations **(9.2)**

1. (*b*) $\sqrt{100}+\sqrt{16}=\sqrt{225}-\sqrt{1}$

$10+4=15-1 \Rightarrow 14=14$

2. (*c*) From option (c),

$8 * 8 * 1 * 7 = 8$

$\Rightarrow 8 \div 8 \times 1 + 7 = 8 \Rightarrow 8 = 8$

3. (*c*) From option (c),

$24 = 34 \div 2 - 5 + 12$

$\Rightarrow 24 = 17 - 5 + 12 \Rightarrow 24 = 29 - 5 \Rightarrow 24 = 24$

4. (*b*) Given, 40* 2* 4 * 3 * 8

Let us check all the options one by one.

From option (a), putting the signs in given equation, we get

$40 + 2 - 4 \div 3 = 8 \Rightarrow 42 - \frac{4}{3} = 8$

$\Rightarrow 126 - 4 = 24 \Rightarrow 122 = 24$

$\therefore$ LHS $\neq$ RHS

So, option (a) is incorrect.

From option (b), putting the signs in given equation, we get

$40 \div 2 + 4 = 3 \times 8$

$\Rightarrow 20 + 4 = 24 \Rightarrow 24 = 24$

LHS = RHS

Hence, option (b) is correct and there is no need to check remaining options.

5. (*a*) As, $2463 \rightarrow (2+4+6) \times 3 = 12 \times 3 = 36$

and $5552 \rightarrow (5+5+5) \times 2 = 15 \times 2 = 30$

Similarly, $6732 \rightarrow (6+7+3) \times 2 = 16 \times 2 = 32$

6. (*c*) As, $\overset{1}{2}+\overset{2}{6}+\overset{3}{9} \longrightarrow \overset{3}{9}\,\overset{1}{2}\,\overset{2}{6}$ $\quad \overset{1}{1}+\overset{2}{8}+\overset{3}{2} \longrightarrow \overset{3}{2}\,\overset{1}{1}\,\overset{2}{8}$

Similarly, $\overset{1}{4}+\overset{2}{3}+\overset{3}{1} \longrightarrow \overset{3}{1}\,\overset{1}{4}\,\overset{2}{3}$

$\therefore$? = 143

7. (*b*) As, $7-4-1 \longrightarrow 714 \quad 9-2-3 \longrightarrow 932$

Similarly, $8-0-4 \longrightarrow 840$

8. (*b*) As, $4-4 \Rightarrow 4 \times 4 + 1 = 17$

$6-6 \Rightarrow 6 \times 6 + 1 = 37$

$2-2 \Rightarrow 2 \times 2 + 1 = 5$

Similarly, $5-5 \Rightarrow 5 \times 5 + 1 = 26$

$\therefore$? = 26

9. (*c*) As, $4-4 \Rightarrow 4 \times 4 - 4 = 12$

$6-6 \Rightarrow 6 \times 6 - 6 = 30 \Rightarrow 2-2 \Rightarrow 2 \times 2 - 2 = 2$

Similarly, $8-8 \Rightarrow 8 \times 8 - 8 = 56$

$\therefore$? = 56

10. (*b*) As,

$$\begin{array}{ccccc} 4 & \times & 6 & \times & 2 \\ {\scriptstyle -1}\downarrow & & {\scriptstyle -1}\downarrow & & {\scriptstyle -1}\downarrow \\ 3 & & 5 & & 1 \end{array}$$

and

$$\begin{array}{ccccc} 3 & \times & 9 & \times & 8 \\ {\scriptstyle -1}\downarrow & & {\scriptstyle -1}\downarrow & & {\scriptstyle -1}\downarrow \\ 2 & & 8 & & 7 \end{array}$$

Similarly,

$$\begin{array}{ccccc} 9 & \times & 5 & \times & 6 \\ {\scriptstyle -1}\downarrow & & {\scriptstyle -1}\downarrow & & {\scriptstyle -1}\downarrow \\ \multicolumn{5}{c}{\boxed{8 \qquad 4 \qquad 5}} \end{array}$$

? = 845

11. (*c*) As, $5 \times 3 \times 9 \longrightarrow 395$ and $9 \times 7 \times 5 \longrightarrow 759$

Similarly, $7 \times 6 \times 4 \longrightarrow 647$

$\therefore$? = 647

12. (*c*) As, $4 \times 6 \times 9 \longrightarrow 6 \times 9 \times 4$

$5 \times 3 \times 2 \longrightarrow 3 \times 2 \times 5$

Similarly, $7 \times 8 \times 2 \longrightarrow 8 \times 2 \times 7$

13. (*c*) As, $9 \star 7 \Rightarrow (9+7)(9-7) = 16 \times 2 = 32$

$13 \star 7 \Rightarrow (13+7)(13-7) = 20 \times 6 = 120$

$17 \star 9 \Rightarrow (17+9)(17-9) = 26 \times 8 = 208$

Similarly, $19 \star 11 \Rightarrow (19+11)(19-11) = 30 \times 8 = 240$

$\therefore$? = 240

14. (*a*) As,

$$\begin{array}{cccccc} 5^* & 6^* & 7, & 4^* & 2^* & 5 \\ {\scriptstyle +2}\downarrow & {\scriptstyle +2}\downarrow & {\scriptstyle +2}\downarrow & {\scriptstyle +2}\downarrow & {\scriptstyle +2}\downarrow & {\scriptstyle +2}\downarrow \\ 7 & 8 & 9 & 6 & 4 & 7 \end{array}$$

and

$$\begin{array}{ccc} 5^* & 1^* & 7 \\ {\scriptstyle +2}\downarrow & {\scriptstyle +2}\downarrow & {\scriptstyle +2}\downarrow \\ 7 & 3 & 9 \end{array}$$

Similarly,

$$\begin{array}{ccccc} 3 & \star & 6 & \star & 2 \\ {\scriptstyle +2}\downarrow & & {\scriptstyle +2}\downarrow & & {\scriptstyle +2}\downarrow \\ \multicolumn{5}{c}{\boxed{5 \qquad 8 \qquad 4}} \end{array}$$

$\therefore$? = 584

15. (*c*) Here, Right number – Left number = Middle number

As, $43 - 16 = 27,\ 48 - 36 = 12$

Similarly, $56 - 29 = 27$

$\therefore$? = 27

16. (*b*) Here, Product of left and right numbers = Middle number

As, $10 \times 15 = 150,\ 14 \times 16 = 224$

Similarly, $13 \times 15 = 195$

$\therefore$? = 195

17. (*d*) Let us check all options one by one.

From option (a),

$$17 \underset{\substack{\downarrow \\ \times}}{-} 3 \underset{\substack{\downarrow \\ =}}{\times} 6 \underset{\substack{\downarrow \\ -}}{=} 45$$

$$\Rightarrow \quad 17 \times 3 = 6 - 45 \qquad \text{(using VBODMAS rule)}$$

$$\Rightarrow \quad 51 = -39 \quad \Rightarrow \quad \text{LHS} \neq \text{RHS}$$

So, option (a) is incorrect.

From option (b),

$$17 \underset{\substack{\downarrow \\ -}}{-} 3 \underset{\substack{\downarrow \\ \times}}{\times} 6 \underset{\substack{\downarrow \\ =}}{=} 45$$

$$\Rightarrow \quad 17 - 3 \times 6 = 45 \qquad \text{(using VBODMAS rule)}$$

$$\Rightarrow \quad 17 - 18 = 45 \quad \Rightarrow \quad -1 = 45$$

$$\therefore \quad \text{LHS} \neq \text{RHS}$$

So, option (b) is incorrect.

From option (c),

$$17 \underset{\substack{\downarrow \\ =}}{-} 3 \underset{\substack{\downarrow \\ \times}}{\times} 6 \underset{\substack{\downarrow \\ -}}{=} 45$$

$$\Rightarrow \quad 17 = 3 \times 6 - 45 \qquad \text{(using VBODMAS rule)}$$

$$\Rightarrow \quad 17 = 18 - 45 \quad \Rightarrow \quad 17 = -27$$

$$\therefore \quad \text{LHS} \neq \text{RHS}$$

So, option (c) is incorrect.

From option (d),

$$17 \underset{\substack{\downarrow \\ \times}}{-} 3 \underset{\substack{\downarrow \\ -}}{\times} 6 \underset{\substack{\downarrow \\ =}}{=} 45$$

$$\Rightarrow \quad 17 \times 3 - 6 = 45 \qquad \text{(using VBODMAS rule)}$$

$$\Rightarrow \quad 51 - 6 = 45 \quad \Rightarrow \quad 45 = 45$$

$$\therefore \quad \text{LHS} = \text{RHS}$$

So, option (d) is correct.

18. (*a*) Let us check all the options one-by-one.

From option (a), $3 \underset{\substack{\downarrow \\ \times}}{+} 2 \underset{\substack{\downarrow \\ +}}{\times} 1 \underset{\substack{\downarrow \\ =}}{=} 7$

$$\Rightarrow \quad 3 \times 2 + 1 = 7 \qquad \text{(using VBODMAS rule)}$$

$$\Rightarrow \quad 6 + 1 = 7 \quad \Rightarrow \quad 7 = 7$$

$$\therefore \quad \text{LHS} = \text{RHS}$$

As option (a) gives us correct answer, there is no need to check remaining options.

19. (*b*) Let us check all the options one by one.

From option (a),

$$6 - 5 + 4 = 34 \qquad \text{(using VBODMAS rule)}$$

$$\Rightarrow \quad 10 - 5 = 34 \quad \Rightarrow \quad 5 = 34$$

$$\therefore \quad \text{LHS} \neq \text{RHS}$$

So, option (a) is incorrect.

From option (b),

$$6 \times 5 + 4 = 34 \qquad \text{(using VBODMAS rule)}$$

$$\Rightarrow \quad 30 + 4 = 34 \quad \Rightarrow \quad 34 = 34$$

$$\Rightarrow \quad \text{LHS} = \text{RHS}$$

So, option (b) gives us the correct answer and hence, there is no need to check remaining options.

20. (*c*) Let us check all the options one-by-one.

From option (a),

$$7 - 4 \times 8 \times 2 = 24 \qquad \text{(using VBODMAS rule)}$$

$$\Rightarrow \quad 7 - 64 = 24 \quad \Rightarrow \quad -57 = 24$$

$$\therefore \quad \text{LHS} \neq \text{RHS}$$

So, option (a) is incorrect.

From option (b),

$$7 - 4 \times 8 \div 2 = 24 \qquad \text{(using VBODMAS rule)}$$

$$\Rightarrow \quad 7 - 4 \times 4 = 24 \quad \Rightarrow \quad 7 - 16 = 24$$

$$\Rightarrow \quad -9 = 24 \quad \Rightarrow \quad \text{LHS} \neq \text{RHS}$$

So, option (b) is incorrect.

From option (c),

$$7 \times 4 - 8 \div 2 = 24 \qquad \text{(using VBODMAS rule)}$$

$$\Rightarrow \quad 7 \times 4 - 4 = 24 \quad \Rightarrow \quad 28 - 4 = 24$$

$$\Rightarrow \quad 24 = 24 \quad \Rightarrow \quad \text{LHS} = \text{RHS}$$

So, option (c) is correct and hence, there is no need to check option (d).

21. (*a*) Let us check all the options one by one.

From option (a),

$$65 - 40 + 11 = 36 \quad \Rightarrow \quad 76 - 40 = 36$$

$$\Rightarrow \quad 36 = 36 \quad \Rightarrow \quad \text{LHS} = \text{RHS}$$

So, option (a) is correct and hence there is no need to check remaining options.

22. (*d*) $8 \div 4 \times 6 \times 5 = \frac{8}{4} \times 6 \times 5 = 2 \times 6 \times 5 = 60$

23. (*b*) Given, 7 * 7 * 2 * 1 = 12

Let us check all the options one by one.

From option (a), putting the signs in given equation, we get

$$7 \times 7 - 2 \div 1 = 12 \quad \Rightarrow \quad 7 \times 7 - 2 = 12$$

$$\Rightarrow \quad 49 - 2 = 12 \quad \Rightarrow \quad 47 = 12$$

$$\Rightarrow \quad \text{LHS} \neq \text{RHS}$$

So, option (a) is incorrect.

From option (b), putting the signs in given equation, we get

$$7 + 7 - 2 \times 1 = 12 \quad \Rightarrow \quad 7 + 7 - 2 = 12$$

$$\Rightarrow \quad 14 - 2 = 12 \quad \Rightarrow \quad 12 = 12$$

Hence, option (b) is correct and there is no need to check remaining options.

24. (*b*) $\boxed{L}\boxed{?}\boxed{K}\boxed{K}\boxed{K}\boxed{=}\boxed{24}$

According to the question,

$$7 + ? + 4 + 4 + 4 = 24$$

$$\Rightarrow \quad ? = 24 - 19 = 5 = O$$

Hence, O is the missing symbol in the block.

25. (*a*) Given equation, $(16 - 4) \times 6 \div 2 + 8 = 30$

Let us check all the options one by one.

From option (a), after interchanging signs, we get

$$(16 \div 4) \times 6 - 2 + 8 = 30 \quad \Rightarrow \quad 4 \times 6 - 2 + 8 = 30$$

$$\Rightarrow \quad 24 - 2 + 8 = 30 \quad \Rightarrow \quad 32 - 2 = 30$$

$$\Rightarrow \quad 30 = 30$$

So, option (a) is correct and there is no need to check remaining options.

26. (*c*) As, $73 + 82 = 14$

$\Rightarrow \quad (7-3)+(8+2) = 14$

$\Rightarrow \quad 4 + 10 = 14$

$\Rightarrow \quad 14 = 14$ and $91 + 21 = 11$

$\Rightarrow \quad (9-1)+(2+1) = 11$

$\Rightarrow \quad 8 + 3 = 11 \Rightarrow 11 = 11$

Similarly, $86 + 24 = (8-6)+(2+4) = 2 + 6 = 8$

27. (*b*) From option (b),

$24 = 4 \times 5 + 4$

$\Rightarrow \quad 24 = 20 + 4 \Rightarrow 24 = 24$

28. (*d*) $\because 16 \times 6 \div 4 = 24$

$\Rightarrow \quad \frac{96}{4} = 24 \Rightarrow 24 = 24$

29. (*a*) $\because 9 \div 3 \times 3 - 3 = 6 \Rightarrow 3 \times 3 - 3 = 6$

$\Rightarrow 9 - 3 = 6 \Rightarrow 6 = 6$

30. (*b*) $\because 8 * 6 * 96 * 2 = 0 \Rightarrow 8 \times 6 - 96 \div 2 = 0$

$\Rightarrow \quad 48 - 48 = 0$

31. (*d*) $\because 8 \times 20 \div 3 + 9 - 5 = 38 \Rightarrow 8 \times 20 \div 5 + 9 - 3 = 38$

$\Rightarrow \quad 8 \times 4 + 9 - 3 = 38 \Rightarrow 32 + 9 - 3 = 38$

32. (*b*) $\because (18 \div 9) + 3 \times 5 = 45$

$\Rightarrow (18 + 9) \div 3 \times 5 = 45 \Rightarrow 27 \div 3 \times 5 = 45$

33. (*a*) $\because 5 + 6 \times 3 - 12 \div 2 = 17$

$\Rightarrow 5 + 18 - 6 = 17 \Rightarrow 23 - 6 = 17$

34. (*c*) $\because 6 \times 4 + 2 = 16 \Rightarrow 4 + 6 \times 2 = 16 \Rightarrow 4 + 12 = 16$

35. (*b*) As, $\frac{264}{2} = 132 \Rightarrow 1 + 3 + 2 = 6$

$\Rightarrow \frac{870}{3} = 290 \Rightarrow 2 + 9 + 0 = 11$

Similarly, $\frac{735}{5} = 147 \Rightarrow 1 + 4 + 7 = 12$

Type 5 Find the Resultant Number in a Row

In this type of questions, two rows of numbers are given along with certain rules. On the basis of these rules, one is required to find out resultant number in each row separately and question below the row is to be answered. The operation of numbers progresses from left to right. Firstly, operation for the first two numbers is done and the number obtained from this operation (operation of the first two numbers) and the third number is used to get the required answer.

Directions (Example Nos. 13-17) In each of the following questions two rows of numbers are given. The resultant number of each row is to be worked out separately based on the following rules and the question below the rows is to be answered. The operations of numbers progress from left to right.

Rules

(i) If an even number is followed by another even number, they are to be added.
(ii) If an even number is followed by a prime number, they are to be multiplied.
(iii) If an odd number is followed by an even number, the even number is to be subtracted from the odd number.
(iv) If an odd number is followed by another odd number, the first number is to be added to the square of the second number.
(v) If an even number is followed by a composite odd number, the even number is to be divided by the odd number.

***Ex* 13** **1st Row** 84 21 13
2nd Row 15 11 44

What is the half of the sum of the resultants of the two rows?

(a) 116 (b) 132 (c) 232 (d) 236

***Ex* 14** **1st Row** 45 18 12
2nd Row 22 14 9

What is the product of the resultants of the two rows?

(a) 75 (b) 48
(c) 45 (d) None of these

***Ex* 15** **1st Row** 12 7 16
2nd Row 79 28 15

What is the difference between the resultants of the first row and second row?

(a) 276 (b) 176 (c) 100 (d) 156

***Ex* 16** **1st Row** 36 13 39
2nd Row 77 30 7

What will be the outcome, if the resultant of the second row is divided by the resultant of the first row?

(a) 12
(b) 16
(c) 8
(d) 6

***Ex* 17** **1st Row** 65 11 12
2nd Row 15 3 11

What is the sum of the resultants of the two rows?

(a) 366
(b) 66
(c) 264
(d) 462

Solutions (Example Nos. 13-17)

(i) Even number + Even number
(ii) Even number × Prime number
(iii) Odd number – Even number
(iv) Odd number + (Odd number)^2
(v) Even number ÷ Composite odd number

13. (*a*) **1st Row** 84 21 13 $\Rightarrow$ $84 \div 21 = 4$ [rule (v)]
$\Rightarrow$ $4 \times 13 = 52$ [rule (ii)]
2nd Row 15 11 44 $\Rightarrow 15 + 11^2 = 136$ [rule (iv)]
$\Rightarrow$ $136 + 44 = 180$ [rule (i)]
$\therefore$ Required answer $= \frac{180 + 52}{2} = \frac{232}{2} = 116$

14. (*d*) **1st Row** 45 18 12 $\Rightarrow$ $45 - 18 = 27$ [rule (iii)]
$\Rightarrow$ $27 - 12 = 15$ [rule (iii)]
2nd Row 22 14 9 $\Rightarrow$ $22 + 14 = 36$ [rule (i)]
$\Rightarrow$ $36 \div 9 = 4$ [rule (v)]
$\therefore$ Required answer $= 15 \times 4 = 60$

15. (*b*) **1st Row** 12 7 16 $\Rightarrow$ $12 \times 7 = 84$ [rule (ii)]
$\Rightarrow$ $84 + 16 = 100$ [rule (i)]
2nd Row 79 28 15 $\Rightarrow 79 - 28 = 51$ [rule (iii)]
$\Rightarrow$ $51 + (15)^2 = 276$ [rule (iv)]
$\therefore$ Required answer $= 276 - 100 = 176$

16. (*c*) **1st Row** 36 13 39 $\Rightarrow$ $36 \times 13 = 468$ [rule (ii)]
$\Rightarrow$ $468 \div 39 = 12$ [rule (v)]
2nd Row 77 30 7 $\Rightarrow 77 - 30 = 47$ [rule (iii)]
$\Rightarrow$ $47 + 7^2 = 96$ [rule (iv)]
$\therefore$ Required answer $= \frac{96}{12} = 8$

17. (*d*) **1 st Row** 65 11 12 $\Rightarrow$ $65 + 11^2 = 186$ [rule (iv)]
$\Rightarrow$ $186 + 12 = 198$ [rule (i)]
2nd Row 15 3 11 $\Rightarrow$ $15 + 3^2 = 24$ [rule (iv)]
$\Rightarrow$ $24 \times 11 = 264$ [rule (ii)]
$\therefore$ Required answer $= 198 + 264 = 462$

Practice Corner **9.3**

Build your Confidence...

Directions (Q. Nos. 1-5) In each of the following questions two rows of numbers are given. The resultant number in each row is to be worked out separately based on the following rules and the questions below the rows of numbers are to be answered. The operations of numbers progress from left to right. **[PNB (PO) 2007]**

Rules

(i) If a two-digit odd number is followed by a two-digit odd number, they are to be added.
(ii) If a two-digit even number is followed by a two digit odd number which is a perfect square, the even number is to be subtracted from the odd number.
(iii) If a three-digit number is followed by a two -digit number, the first number is to be divided by the second number.
(iv) If a prime number is followed by an even number, the two are to be added.
(v) If an even number is followed by another even number, the two are to be multiplied.

1. 23 15 12
X 24 49

If 'X' is the resultant of the first row, what is the resultant of the second row?

(a) 24 (b) 25 (c) 28 (d) 22
(e) None of these

2. 37 12 21
38 81 14

What is the difference between the resultants of the two rows?

(a) 23 (b) 32 (c) 13 (d) 18
(e) None of these

3. 16 8 32
132 11 X^2

If X is the resultant of the first row, what is the resultant of the second row?

(a) 192 (b) 128 (c) 132 (d) 144
(e) None of these

4. 345 23 X
45 17 81

It 'X' is the resultant of the second row, what is the resultant of the first row?

(a) 285 (b) 33 (c) 135 (d) 34
(e) None of these

5. 12 28 84
37 22 18

What is the sum of the resultants of the two rows?

(a) 77
(b) 87
(c) 84
(d) 72
(e) None of the above

Directions (Q. Nos. 6-11) In each of the following questions, two rows of numbers are given. The resultant number in each row is to be worked out separately based on the following rules and the questions below the rows of numbers are to be answered. The operations of numbers progress from left to the right. **[SBI (PO) 2008]**

Rules

- (i) If an odd number is followed by another composite odd number, they are to be added.
- (ii) If an even number is followed by an odd number, they are to be added.
- (iii) If an even number is followed by a number which is the perfect square, the even number is to be subtracted from the perfect square.
- (iv) If an odd number is followed by a prime odd number, the first number is to be divided by the second number.
- (v) If an odd number is followed by an even number, the second one is to be subtracted from the first number.

6. 15 8 21
p 3 27

If 'p' is the resultant of the first row, what will be the resultant of the second row?

(a) 58 (b) 76 (c) 27 (d) 82
(e) None of these

7. 12 64 17
20 m 16

If 'm' is the resultant of the first row, what will be the resultant of the second row?

(a) 69 (b) 85 (c) 101 (d) 121
(e) None of these

8. 85 17 35
16 19 r

If 'r' is the resultant of the first row, what will be the resultant of the second row?

(a) 175 (b) – 5
(c) 75 (d) 210
(e) None of these

9. 24 15 3
d 6 15

If 'd' is the resultant of the first row, what will be the resultant of the second row?

(a) 37 (b) 8 (c) 22 (d) 29
(e) None of these

10. 28 49 15
h 3 12

If 'h' is the resultant of the first row, what will be the resultant of the second row?

(a) 13 (b) 15 (c) 19 (d) 27
(e) None of these

11. 36 15 3
12 3 n

If 'n' is the resultant of the first row, what will be the resultant of the second row?

(a) $\frac{15}{17}$ (b) 32 (c) $\frac{12}{17}$ (d) 36
(e) None of these

Directions (Q. Nos. 12-16) In each of the following questions two rows of numbers are given. The resultant number in each row is to be worked out separately based on the following rules and the questions below the rows of numbers are to be answered. The operations of numbers progress from left to right. **[PNB (PO) 2010]**

Rules

- (i) If an odd number is followed by another composite odd number, they are to be multiplied.
- (ii) If an even number is followed by an odd number, they are to be added.
- (iii) If an even number is followed by a number which is a perfect square, the even number is to be subtracted from the perfect square.
- (iv) If an odd number is followed by a prime odd number, the first number is to be divided by the second number.
- (v) If an odd number is followed by an even number, the second one is to be subtracted from the first one.

12. 58 17 5
85 5 n

If 'n' is the resultant of the first row, what is the resultant of the second row?

(a) 255 (b) 32 (c) 49 (d) 34
(e) None of these

13. 24 64 15
m 11 15

If 'm' is the resultant of the first row, what is the resultant of the second row?

(a) 165 (b) 75 (c) 20 (d) 3
(e) None of these

14. 7 21 3
d 7 33

If 'd' is the resultant of the first row, what will be the resultant of the second row?

(a) 40
(b) 138
(c) 231
(d) 80
(e) None of the above

15. 73 34 13

32 p 15

If 'p' is the resultant of the first row, what is the resultant of the second row?

(a) 713 (b) 50 (c) 20 (d) 525
(e) None of these

16. 14 5 9
24 w 88

If 'w' is the resultant of the first row, what is the resultant of the second row?

(a) 171 (b) 283 (c) 195 (d) 107
(e) None of these

Directions (Q. Nos. 17-21) In each of the following questions two rows of numbers are given. The resultant number in each row is to be worked out separately based on the following rules and the questions below the rows of numbers are to be answered. The operations of numbers progress from left to right. **[UCO Bank (PO) 2008]**

Rules

(i) If a two-digit even number is followed by another even number, the first one is to be divided by the second one.
(ii) If an even number is followed by a prime number, the two are to be multiplied.
(iii) If an odd number is followed by another odd number, the two are to be added.
(iv) If a three-digit number is followed by a two-digit number which is a perfect square, the second number is to be subtracted from the first number.
(v) If a three-digit number is followed by a two-digit number which is not a perfect square, the first number is to be divided by the second one.

17. 16 7 25
m 23 22

If 'm' is the resultant of the first row, what is the resultant of the second row?

(a) 132 (b) 88 (c) 122 (d) 78
(e) None of these

18. 97 45 71
48 8 11

What is the sum of the resultants of the two rows?

(a) 68 (b) 19 (c) 147 (d) 64
(e) None of these

19. 125 64 33
282 x 39

If 'x' is resultant of the first row, what is the resultant of the second row?

(a) 45 (b) 42 (c) 39 (d) 36
(e) None of these

20. 84 14 13
360 24 17

What is the difference between the resultants of the first row and the second row?

(a) 100 (b) 46
(c) 56 (d) 90
(e) None of these

21. 24 7 81
x 27 19

If 'x' is the resultant of the first row, what is the resultant of the second row?

(a) 87 (b) 114
(c) 4 (d) 6
(e) None of these

Response & Interpretations **(9.3)**

Solutions (Q. Nos. 1-5)

Rules

(i) (2-digit odd number) + (2-digit odd number)
(ii) 2-digit even number ⟶ 2-digit perfect square odd number then, (odd number) − (Even number)
(iii) (3-digit number) ÷ (2-digit number)
(iv) (Prime number) + (Even number)
(v) (Even number) × (Even number)

1. (e) **1st Row** 23 15 12 ⇒ 23 + 15 = 38 [rule (i)] ⇒ 38 × 12 = 456 [rule (v)]
= X

2nd Row X 24 49 ⇒ 456 24 49 ⇒ 456 ÷ 24 = 19 [rule (iii)] ⇒ 19 + 49 = 68 [rule (i)]

∴ Resultant of second row = 68

2. (*c*) **1st Row** 37 12 21 $\Rightarrow$ $37 + 12 = 49$ [rule (iv)]
$\Rightarrow$ $49 + 21 = 70$ [rule (i)]
2nd Row 38 81 14 $\Rightarrow$ $81 - 38 = 43$ [rule (ii)]
$\Rightarrow$ $43 + 14 = 57$ [rule (iv)]
$\therefore$ Required difference $= 70 - 57 = 13$

3. (*a*) **1st Row** 16 8 32 $\Rightarrow$ $16 \times 8 = 128$ [rule (v)]
$\Rightarrow$ $128 \div 32 = 4$ [rule (iii)]
$= X$
2nd Row 132 11 X^2 $\Rightarrow$ 132 11 16
$\Rightarrow$ $132 \div 11 = 12$ [rule (iii)]
$\Rightarrow$ $12 \times 16 = 192$ [rule (v)]
$\therefore$ Resultant of second row $= 192$

4. (*d*) **2nd Row** 45 17 81 $\Rightarrow$ $45 + 17 = 62$ [rule (i)]
$\Rightarrow$ $81 - 62 = 19$ [rule (ii)]
$= X$
1st Row 345 23 X $\Rightarrow$ 345 23 19
$\Rightarrow$ $345 \div 23 = 15$ [rule (iii)]
$\Rightarrow$ $15 + 19 = 34$ [rule (i)]
$\therefore$ Resultant of first row $= 34$

5. (*e*) **1st Row** 12 28 84 $\Rightarrow$ $12 \times 28 = 336$ [rule (v)]
$\Rightarrow$ $336 \div 84 = 4$ [rule (iii)]
2nd Row 37 22 18 $\Rightarrow$ $37 + 22 = 59$ [rule (iv)]
$\Rightarrow$ $59 + 18 = 77$ [rule (iv)]
$\therefore$ Required sum $= 4 + 77 = 81$

Solutions (Q. Nos. 6-11)

Rules

(i) (Odd number) + (Composite odd number)
(ii) (Even number) + (Odd number)
(iii) (Even number) $\longrightarrow$ (Perfect square number), then (Perfect square number) – (Even number)
(iv) (Odd number) $\div$ (Prime odd number)
(v) (Odd number) – (Even number)

6. (*a*) **1st Row** 15 8 21 $\Rightarrow$ $15 - 8 = 7$ [rule (v)]
$\Rightarrow$ $7 + 21 = 28$ [rule (i)]
$= p$
2nd Row p 3 27 $\Rightarrow$ 28 3 27
$\Rightarrow$ $28 + 3 = 31$ [rule (ii)]
$\Rightarrow$ $31 + 27 = 58$ [rule (i)]
$\therefore$ Resultant of second row $= 58$

7. (*e*) **1st Row** 12 64 17 $\Rightarrow$ $64 - 12 = 52$ [rule (iii)]
$\Rightarrow$ $52 + 17 = 69$ [rule (ii)]
$= m$
2nd Row 20 m 16 $\Rightarrow$ 20 69 16
$\Rightarrow$ $20 + 69 = 89$ [rule (ii)]
$\Rightarrow$ $89 - 16 = 73$ [rule (v)]
$\therefore$ Resultant of second row $= 73$

8. (*b*) **1st Row** 85 17 35 $\Rightarrow$ $85 \div 17 = 5$ [rule (iv)]
$\Rightarrow$ $5 + 35 = 40$ [rule (i)]
$= r$
2nd Row 16 19 *r* $\Rightarrow$ 16 19 40
$\Rightarrow$ $16 + 19 = 35$ [rule (ii)]
$\Rightarrow$ $35 - 40 = -5$ [rule (v)]
$\therefore$ Resultant of second row $= -5$

9. (*c*) **1st Row** 24 15 3 $\Rightarrow$ $24 + 15 = 39$ [rule (ii)]
$\Rightarrow$ $39 \div 3 = 13$ [rule (iv)]
$= d$
2nd Row d 6 15 $\Rightarrow$ 13 6 15
$\Rightarrow$ $13 - 6 = 7$ [rule (v)]
$\Rightarrow$ $7 + 15 = 22$ [rule (i)]
$\therefore$ Resultant of second row $= 22$

10. (*d*) **1st Row** 28 49 15 $\Rightarrow$ $49 - 28 = 21$ [rule (iii)]
$\Rightarrow$ $21 + 15 = 36$ [rule (i)]
$= h$
2nd Row h 3 12 $\Rightarrow$ 36 3 12
$\Rightarrow$ $36 + 3 = 39$ [rule (ii)]
$\Rightarrow$ $39 - 12 = 27$ [rule (v)]
$\therefore$ Resultant of second row $= 27$

11. (*a*) **1st Row** 36 15 3 $\Rightarrow$ $36 + 15 = 51$ [rule (ii)]
$\Rightarrow$ $51 \div 3 = 17$ [rule (iv)]
$= n$
2nd Row 12 3 n $\Rightarrow$ 12 3 17
$\Rightarrow$ $12 + 3 = 15$ [rule (ii)]
$\Rightarrow$ $15 \div 17 = \frac{15}{17}$ [rule (iv)]
$\therefore$ Resultant of second row $= \frac{15}{17}$

Solutions (Q. Nos. 12-16)

Rules

(i) (Odd number) $\times$ (Composite odd number)
(ii) (Even number) + (Odd number)
(iii) (Even number) $\longrightarrow$ (Perfect square number), then (Perfect square number) – (Even number)
(iv) (Odd number) $\div$ (Prime odd number)

(v) (Odd number) – (Even number)

12. (*a*) **1st Row** 58 17 5 ⇒ 58 + 17 = 75 [rule (ii)]
⇒ 75 ÷ 5 = 15 [rule (iv)]
= n
2nd Row 85 5 n ⇒ 85 5 15
⇒ 85 ÷ 5 = 17 [rule (iv)]
⇒ 17 × 15 = 255 [rule (i)]
∴ Resultant of second row = 255

13. (*b*) **1st Row** 24 64 15 ⇒ 64 – 24 = 40 [rule (iii)]
⇒ 40 + 15 = 55 [rule (ii)]
= m
2nd Row m 11 15 ⇒ 55 11 15
⇒ 55 ÷ 11 = 5 [rule (iv)]
⇒ 5 × 15 = 75 [rule (i)]
∴ Resultant of second row = 75

14. (*c*) **1st Row** 7 21 3 ⇒ 7 × 21 = 147 [rule (i)]
⇒ 147 ÷ 3 = 49 = d [rule (iv)]
2nd Row d 7 33 ⇒ 49 7 33
⇒ 49 ÷ 7 = 7 [rule (iv)]
⇒ 7 × 33 = 231 [rule (i)]
∴ Resultant of second row = 231

15. (*d*) **1st Row** 73 34 13 ⇒ 73 – 34 = 39 [rule (v)]
⇒ 39 ÷ 13 = 3 = p [rule (iv)]
2nd Row 32 p 15 ⇒ 32 3 15
⇒ 32 + 3 = 35 [rule (ii)]
⇒ 35 × 15 = 525 [rule (i)]
∴ Resultant of second row = 525

16. (*d*) **1st Row** 14 5 9 ⇒ 14 + 5 = 19 [rule (ii)]
19 × 9 = 171 [rule (i)]
= w
2nd Row 24 w 88 ⇒ 24 171 88
⇒ 24 + 171 = 195 [rule (ii)]
⇒ 195 – 88 = 107 [rule (v)]
∴ Resultant of second row = 107

Solutions (Q. Nos. 17-21)

Rules

(i) (2-digit even number) ÷ (Even number)
(ii) (Even number) × (Prime number)
(iii) (Odd number) + (Odd number)
(iv) (3-digit number) – (2-digit perfect square number)
(v) (3-digit number) ÷ (2-digit non-perfect square number)

17. (*e*) **1st Row** 16 7 25 ⇒ 16 × 7 = 112 [rule (ii)]
⇒ 112 – 25 = 87 = m [rule (iv)]
2nd Row m 23 22 ⇒ 87 23 22
⇒ 87 + 23 = 110 [rule (iii)]
⇒ 110 ÷ 22 = 5 [rule (v)]
∴ Resultant of second row = 5

18. (*a*) **1st Row** 97 45 71 ⇒ 97 + 45 = 142 [rule (iii)]
⇒ 142 ÷ 71 = 2 [rule (v)]
2nd Row 48 8 11 ⇒ 48 ÷ 8 = 6 [rule (i)]
⇒ 6 × 11 = 66 [rule (ii)]
∴ Required sum = 2 + 66 = 68

19. (*b*) **1st Row** 125 64 33 ⇒ 125 – 64 = 61 [rule (iv)]
⇒ 61 + 33 = 94 [rule (iii)]
= x
2nd Row 282 x 39 ⇒ 282 94 39
⇒ 282 ÷ 94 = 3 [rule (v)]
⇒ 3 + 39 = 42 [rule (iii)]
∴ Resultant of second row = 42

20. (*b*) **1st Row** 84 14 13 ⇒ 84 ÷ 14 = 6 [rule (i)]
⇒ 6 × 13 = 78 [rule (ii)]
2nd Row 360 24 17 ⇒ 360 ÷ 24 = 15 [rule (v)]
⇒ 15 + 17 = 32 [rule (iii)]
∴ Required difference = 78 – 32 = 46

21. (*d*) **1st Row** 24 7 81 ⇒ 24 × 7 = 168 [rule (ii)]
⇒ 168 – 81 = 87 [rule (iv)]
= x
2nd Row x 27 19 ⇒ 87 27 19
⇒ 87 + 27 = 114 [rule (iii)]
⇒ 114 ÷ 19 = 6 [rule (v)]
∴ Resultant of second row = 6

Section II. Inequalities

Inequality means state of being unequal. Inequality based questions involve use of signs such as 'less than', 'greater than', equal to' 'not equal to' etc., in order to derive a definite conclusion by establishing relation between different sets of elements. First of all a candidate is required to become familiar with all types of signs that are used for establishing inequalities.

A table of these signs along with their meaning and explanation is given as follows

Important Signs

S. No.	Signs	Meaning	Example	Explanation
1	$=$	Equal to	$A = B$	(i) A is equal to B. (ii) A is neither greater nor smaller than B.
2	$>$	Greater than	$A > B$	(i) A is greater than B. (ii) A is neither smaller than nor equal to B.
3	$<$	Less than	$A < B$	(i) A is less than B. (ii) A is neither greater than nor equal to B.
4	$\geq$	Greater than or equal to	$A \geq B$	(i) A is greater than or equal to B. (ii) A is not less than B.
5	$\leq$	Less than or equal to	$A \leq B$	(i) A is less than or equal to B. (ii) A is not greater than B.

e.g., $(4 \times 3) = 12$ Equal — Case of equality

$(4 \times 3) \neq 9$ Not equal — Case of inequality

As, $(4 \times 3) \neq 9$, we can write it as following $\Rightarrow$ $(4 \times 3) > 9$ or (4×3) is greater than 9.

$\Rightarrow$ $12 > 9$ or 12 is greater than 9.

Similarly, $(4 \times 3) \neq 14$, we can write it as following

$(4 \times 3) < 14$ or (4×3) is less than 14 $\Rightarrow$ $12 < 14$ or 12 is less than 14.

K Memory *Add-ones*

To derive a definite conclusion from the given statements, there must be a common term.

e.g., **Statement** $X > Y > Z$

Conclusion $X > Z$ ($\because$ Y is a common term or middle term)

If the common term is 'greater than' or 'greater than or equal to' one term and 'less than' or less than or equal to' the other term, then there is definite conclusion.

e.g., **Statement** $X < Y < Z$

Conclusion $X < Z$ ($\because$ y is a common term greater than x but less than z)

If the common term is 'greater than or greater than or equal to' both the other numbers, then there is no definite conclusion.

e.g., **Statement** $X < Y \geq Z$

Conclusion Indefinite.

In the given statements, if a term was not 'greater than' or 'greater than or equal to' other term or terms, then in the conclusion also, that term can not be 'greater than' or 'greater than or equal to' other term or terms.

e.g., **Statements** $A > B, B = C, C \geq D$

Conclusion $D \geq B$

Here, conclusion '$D \geq B$' is definitely false because in the given statements, D is not greater than any term.

In the given statement, if a term was not 'less than' or 'less than or equal to' other term or terms, then in the conclusion also, that term can not be 'less than' or 'less than or equal to' other term or terms.

e.g., **Statements** $A < B, B > C, C < D$

Conclusion $B < D$

Here, conclusion '$B < D$' is definitely false because in the given statements, B is not less than any term.

Steps to Solve Inequality Based Questions

e.g., **Statements** $H < J, F < H, I \leq K = J$

Conclusions I. $H > I$ II. $I \geq F$

***Step* I** Write down all the statements as below

$$H < J \quad \ldots (i)$$

$$F < H \quad \ldots (ii)$$

$$I \leq K = J \quad \ldots (iii)$$

***Step* II** Combine all the statements as below

Firstly, combine statements (i) and (ii) as H is common between both the statements.

$$F < H < J \quad \ldots (iv)$$

Secondly, combine statements (iii) and (iv), we get

$$F < H < J = K \geq I \quad \ldots (v)$$

***Step* III** Check the validity of the given conclusions with the help of statement (v)

I. $H > I$ (*false*) II. $I \geq F$ (*false*)

(i) Two inequalities can be combined only, if there is a link between them. *e.g.,* In $H < J$ and $F < H$, is the link as it is common in both the inequalities.

Two types of problems based on inequalities are asked in various competitive exams. In one type, real symbols are used to establish the relations between different sets of elements while in other type, substituted symbol (*i.e.,* coded symbols) in place of real symbols are used to establish the relations between different sets of elements. In both the cases the candidate is required to find out the alternative that follows the given inequalities.

These two types of inequalities are explained below to have a deeper understanding about the type of questions asked

Type 6 Simple Inequalities

In this type of question, certain relations between different sets of elements are given in terms of 'less than', 'greater than' or 'equal to', using the real symbols. The candidate is required to analyse the given statements and then decide which of the relations given as alternatives follows from those given in the statements.

Direction (Example No. 18) In the question below, relationship between different elements is shown in the statements. These statements are followed by two conclusions.

Give answer

(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either Conclusion I or II follows
(d) if neither Conclusion I nor II follows
(e) if both Conclusions I and II follow

***Ex* 18 Statements** $x > y, y > z, z > H$

Conclusions I. $x > z$ II. $H > x$

Sol. (*a*) According to the question,

$$x > y \quad \ldots (i)$$

$$y > z \quad \ldots (ii)$$

$$z > H \quad \ldots (iii)$$

On combining statements (i) and (ii), we get

$$x > y > z \quad \ldots (iv)$$

On combining statements (iii) and (iv), we get

$$x > y > z > H$$

Conclusions I. $x > z$ (true)

II. $H > x$ (false)

So, it is clear that only Conclusion I follows from the given statements.

Directions (Example Nos. 19-23) In these questions, relationship between different elements is shown in the statements. These statements are followed by two conclusions. **[Corporation Bank (PO) 2011]**

Give answer

(a) if only Conclusion I follows

(b) if only Conclusion II follows

(c) if either Conclusion I or II follows

(d) if neither Conclusion I nor II follows

(e) if both Conclusions I and II follow

Ex **19** **Statement** $P \geq Q = R > S > T$

Conclusions I. $P \geq T$ II. $T < Q$

Sol. (*b*) **Statement** $P \geq Q = R > S > T$

Conclusions

I. $P \geq T$ (it cannot follow, because $R > S > T$. If the conclusions were $P \geq R$, then it would be correct.)

II. $T < Q$ (it follows)

So, only Conclusion II follows.

Ex **20** **Statement** $L \leq M < N > O \geq P$

Conclusions I. $O < M$

II. $P \leq N$

Sol. (*d*) **Statement** $L \leq M < N > O \geq P$

Conclusions

I. $M > O$ (it cannot follow because $M < N > O$)

II. $N \geq P$ (it cannot follow, now take an example : Suppose $P = 10$ and $O = 10, 11$, then $O \geq P$, also $N > O$. So, N must be 12 or greater than 11. So, the equation will be $N > O \geq P$, so it cannot follow.)

So, neither Conclusion I nor II follows.

Ex **21** **Statement** $A > B, B \geq C = D < E$

Conclusions I. $C < A$

II. $D \leq B$

Sol. (*e*) **Statement** $A > B, B \geq C = D < E$

$\therefore$ $A > B \geq C = D < E$

Conclusions

I. $A > C$ (it follows, because $A > B \geq C$)

II. $B \geq D$ (it also follows, because $B \geq C = D$)

So, both Conclusions I and II follow.

Ex **22** **Statement** $H > J = K, K \geq L, L > T, T < V$

Conclusions I. $K > T$ II. $L \leq H$

Sol. (*a*) **Statement** $H > J = K, K \geq L, L > T, T < V$

$\therefore$ $H > J = K \geq L > T < V$

Conclusions

I. $K > T$ (it follows, because $K \geq L > T$)

II. $H \geq L$ (it does not follow, because $H > J = K \geq L$)

So, only Conclusion I follows.

Ex **23** **Statement** $A \leq B = C, D > C = E$

Conclusions I. $E \geq A$ II. $A < D$

Sol. (*e*) **Statement** $A \leq B = C, D > C = E$

$\therefore$ $A \leq B = C = E < D$

Conclusions

I. $E \geq A$ (it follows, because $E = C = B \geq A$

II. $D > A$ (it follows, because $D > B \geq A$)

So, both Conclusions I and II follow.

Practice Corner 9.4

Build your Confidence...

Directions (Q. Nos. 1-5) In these questions, relationship between different elements is shown in the statements. These statements are followed by two conclusions.

Give answer

(a) if only Conclusion I follows

(b) if only Conclusion II follows

(c) if either Conclusion I or II follows

(d) if neither Conclusion I nor II follows

(e) if both Conclusions I and II follow

1. **Statements** $L > M, M > N, N > P$

Conclusions I. $L > P$ II. $M > P$

2. **Statements** $A > B, B = H, H > G$

Conclusions I. $A > G$ II. $A > H$

3. **Statements** $H < J, F < H, I \leq J = K$

Conclusions I. $H > I$ II. $I \geq F$

4. **Statements** $A < B < C \leq D = E$

Conclusions I. $B \leq E$ II. $B < E$

5. **Statements** $P > M > Q, Q > Z > N$

Conclusions I. $M \geq Z$ II. $N < P$

Directions (Q. Nos. 6-10) In these questions, relationships between different elements is shown in the statement. The statement is followed by two conclusions. Study the conclusions based on the given statement and select the appropriate answer. **[IBPS (Clerk) 2013]**

6. Statement $K > I \geq T \geq E; O < R < K$

Conclusions I. $R < E$ II. $O < T$

(a) Neither Conclusion I nor II follows
(b) Both Conclusions I and II follow
(c) Only Conclusion II follows
(d) Either Conclusion I or II follows
(e) Only Conclusion I follows

7. Statement $C < L < O = U = D \geq S > Y$

Conclusions I. $O > Y$ II. $C < D$

(a) Neither Conclusion I nor II follows
(b) Both Conclusions I and II follow
(c) Only Conclusion I follows
(d) Only Conclusion II follows
(e) Either Conclusion I or II follows

8. Statement $K \geq L > M \geq N$

Conclusions I. $N \leq K$ II. $N < K$

(a) Both Conclusions I and II follow
(b) Neither Conclusion I nor II follows
(c) Either Conclusion I or II follows
(d) Only Conclusion I follows
(e) Only Conclusion II follows

9. Statement $Z \geq Y = W \leq X$

Conclusions I. $W < Z$ II. $W = Z$

(a) Only Conclusion II follows
(b) Only Conclusion I follows
(c) Neither Conclusion I nor II follows
(d) Either Conclusion I or II follows
(e) Both Conclusions I and II follow

10. Statement $B > A > S < I > C > L > Y$

Conclusions I. $B > L$
II. $A > Y$

(a) Only Conclusion I follows
(b) Only Conclusion II follows
(c) Either Conclusion I or II follows
(d) Neither Conclusion I nor II follows
(e) Both Conclusions I and II follow

11. Which of the following expressions will be true, if the given expression $K \geq G > H \leq F$ is definitely true? **[NABARD (PO) 2010]**

(a) $F \geq K$ (b) $H < K$
(c) $F < G$ (d) $K \geq H$
(e) None of these

12. In which of the following expressions will the expression '$A < D$' be definitely true?

(a) $A \geq B = C < D$
(b) $A > B = C \geq D$
(c) $A < B = C \leq D$
(d) $A > B < C \leq D$
(e) None of the above

13. In which of the following expressions does the expression '$M > R$' does not hold true?

(a) $M = P > Q > R$
(b) $M > P \geq Q = R$
(c) $R = P < Q < M$
(d) $R < Q \leq P = M$
(e) $M = P < Q = R$

Directions (Q. Nos. 14-18) In these questions, relationship between different elements is shown in the statements. These statements are followed by two conclusions. **[RBI (Assistant) 2012]**

Give answer
(a) if only Conclusion I is true
(b) if only Conclusion II is true
(c) if either Conclusion I or II is true
(d) if neither Conclusion I nor II is true
(e) if both Conclusions I and II are true

14. Statements $H \geq I = J > K \leq L$

Conclusions I. $K < H$ II. $L \geq I$

15. Statements $S > C \geq O, P < C$

Conclusions I. $O < P$ II. $S > P$

16. Statements $A = B \leq C, A > R$

Conclusions I. $B > R$ II. $R < C$

17. Statements $D > E \leq F, J < F$

Conclusions I. $D > J$
II. $E < J$

18. Statements $P < Q > T, R \geq Q$

Conclusions I. $R > P$
II. $T < R$

Directions (Q. Nos. 19-23) In these questions, relationship between different elements is shown in the statements. The statements are followed by two conclusions. **[Rajasthan Grameen Bank (PO) 2011]**

Give answer

(a) if only Conclusion I is true
(b) if only Conclusion II is true
(c) if either Conclusion I or II is true
(d) if neither Conclusion I nor II is true
(e) if both Conclusions I and II are true

19. Statement $F \geq G = H; G > J \geq K$

Conclusions I. $F \geq K$

II. $K < H$

20. Statement $P < Q = R \geq S \geq T$

Conclusions I. $T \leq Q$

II. $R > P$

21. Statement $A \leq B < C; A \geq D; C \leq F$

Conclusions I. $D < C$ II. $F \geq D$

22. Statement $U > A = I \leq O < E$

Conclusions I. $I \leq E$ II. $O > U$

23. Statement $L = M \geq N; M > P; L < K$

Conclusions I. $K > P$ II. $N < K$

Response & Interpretations **(9.4)**

1. (*e*) Given that, $L > M$ ...(i)

$M > N$ ...(ii)

$N > P$ ...(iii)

On combining all the three statements, we get

$L > M > N > P$

Conclusions I. $L > P$ (true)

II. $M > P$ (true)

So, it is clear that both Conclusions I and II follow from the given statements.

2. (*e*) Given that, $A > B$ ...(i)

$B = H$ ...(ii)

$H > G$ ...(iii)

On combining the statements (i), (ii) and (iii), we get

$A > B = H > G$

Conclusions I. $A > G$ (true)

II. $A > H$ (true)

So, it is clear that both Conclusions I and II follow from the given statements.

3. (*d*) Given that, $H < J$ ...(i)

$F < H$ ...(ii)

$I \leq J = K$ ...(iii)

On combining the statements (i), (ii) and (iii), we get

$F < H < J = K \geq I$

Conclusions I. $H > I$ (false)

II. $I \geq F$ (false)

So, it is clear that neither Conclusion I nor II follows from the given statements.

4. (*e*) Given that, $A < B < C \leq D = E$

Here, statements are already combined.

Conclusions I. $B \leq E$ (false)

II. $B < E$ (true)

So, it is clear that only Conclusion II follow from the given statements.

5. (*b*) Given that, $P > M > Q$ ...(i)

$Q > Z > N$ ...(ii)

On combining the statements (i) and (ii) we get

$P > M > Q > Z > N$

Conclusions I. $M \geq Z$ (false)

II. $N < P$ (true)

So, it is clear that only Conclusion II follows from the given statements.

6. (*a*) $K > I \geq T \geq E; O < R < K$

On combining both the statements, we get

$\Rightarrow \quad O < R < K > I \geq T \geq E$

Conclusions I. $R < E$ (false)

II. $O < T$ (false)

Thus, neither Conclusion I nor II follows.

7. (*b*) $C < L < O = U = D \geq S > Y$

Here, statements are already combined.

Conclusions I. $O > Y$ (true)

II. $C < D$ (true)

Thus, both Conclusions I and II follow.

8. (*e*) $K \geq L > M \geq N$

Here, statements are already combined.

Conclusions I. $N \leq K$ (false)

II. $N < K$ (true)

Thus, only Conclusion II follows.

9. (*d*) $Z \geq Y = W \leq X$

Here, statements are already combined.

Conclusion I $W < Z$ (may be true)

OR

Conclusion II $W = Z$ (may be true)

Thus, either Conclusion I or II follows.

10. (*d*) $B > A > S < I > C > L > Y$

Here, statements are already combined.

Conclusions I. $B > L$ (false)

II. $A > Y$ (false)

Thus, neither Conclusion I nor II follows.

11. (*b*) Given that, $K \geq G > H \leq F$

Now, we can check all the options one by one

(a) $F \geq K$ (false)

(b) $H < K$ (true)

(c) $F < G$ (false)

(d) $K \geq H$ (false)

So, it is clear that option (b) is true.

12. (*c*) From the expression $A < B = C \leq D$, $A < D$ will be definitely true.

13. (*e*) We can check all the options one by one.

From option (a),

$$M = P > Q > R \Rightarrow M > R$$

So, expression $M > R$ holds true for option (a).

From option (b),

$$M > P \geq Q = R \Rightarrow M > R$$

So, expression $M > R$ holds true for option (b).

From option (c),

$$R = P < Q < M \Rightarrow R < M$$

So, expression $M > R$ holds true for option (c).

From option (d),

$$R < Q \leq P = M \Rightarrow R < M$$

So, expression $M > R$ holds true for option (d).

From option (e),

$$M = P < Q = R \Rightarrow M < R$$

So, expression $M > R$ does not hold true for option (e).

14. (*a*) Given that, $H \geq I = J > K \leq L$

Here, statements are already combined.

Conclusions I. $K < H$ (true)

II. $L \geq I$ (false)

So, it is clear that only Conclusion I follows from the given statements.

15. (*b*) Given that, $S > C \geq O$ ...(i)

and $P < C$ ...(ii)

On combining the statements (i) and (ii), we get

$$S > C > P \quad \text{and} \quad P < C \geq O$$

Conclusions I. $O < P$ (false)

and II. $S > P$ (true)

So, it is clear that only Conclusion II follow from the given statements.

16. (*e*) Given that, $A = B \leq C$ ...(i)

and $A > R$ ...(ii)

On combining the statements (i) and (ii), we get

$$R < A = B \leq C$$

Conclusions I. $B > R$ (true)

II. $R < C$ (true)

So, it is clear that both Conclusions I and II follow from the given statements.

17. (*d*) Given that, $D > E \leq F$ ...(i)

and $J < F$ ...(ii)

On combining the statements (i) and (ii), we get

$$D > E \leq F > J$$

Conclusions I. $D > J$ (false)

II. $E < J$ (false)

So, it is clear that neither Conclusion I nor II is true.

18. (*e*) Given that, $P < Q > T$ ...(i)

and $R \geq Q$ ...(ii)

On combining the statements (i) and (ii), we get

$$P < Q \leq R \quad \text{and} \quad R \geq Q > T$$

Conclusions I. $R > P$ (true)

II. $T < R$ (true)

So, it is clear that both Conclusions I and II are true.

19. (*b*) **Statement** $F \geq G = H; G > J \geq K$

On combining both the statements, we get

$$F \geq G = H > J \geq K$$

Conclusions I. $F \geq K$ (false)

II. $K < H$ (true)

Hence, only Conclusion II is definitely true.

20. (*e*) **Statement** $P < Q = R \geq S \geq T$

Conclusions I. $T \leq Q$ (ture)

II. $R > P$ (true)

Hence, both conclusions are definitely true.

21. (*a*) **Statement** $A \leq B < C; A \geq D; C \leq F$

On combining both the statements, we get

$D \leq A \leq B < C \leq F$

Conclusions I. $D < C$ (true)

II. $F \geq D$ (false)

Hence, only conlusion I is definitely true.

22. (*d*) **Statement** $U > A = I \leq O < E$

Conclusions I. $I \leq E$ (false)

II. $O > U$ (false)

Hence, neither Conclusion I nor II is definitely true.

23. (*b*) **Statement** $L = M \geq N;\ M > P;\ L < K$

On combing both the statements, we get

$P < L = M \geq N < K$

Conclusions I. $K > P$ (false)

II. $N < K$ (true)

Hence, only Conclusion II is definitely true.

Type 7 Coded Inequalities

Unlike the simple inequalities, coded inequalities have all the signs (>, <, =, ≥ , ≤) in coded form. i.e., substituted symbols are used in place of real symbols *e.g.*, the sign of greater than (>) can be coded as ϕ/@/ * /$ etc. The candidates are required to replace the codes with real signs and then solve the questions in the same way as the questions of simple inequalities are solved.

Directions (Example Nos. 24-28) In the questions that follow, the symbols are used as follows.

A © B means A is greater than B.

A $\underline{\underline{\text{©}}}$ B means A is either greater than or equal to B.

A = B means A is equal to B.

A @ B means A is smaller than B

A $\underline{\underline{@}}$ B means A is either smaller than or equal to B.

Now, in each of the following questions, assuming the three statements to be true, state which of the two Conclusions I and II given below is definitely true.

Give answer
(a) if only Conclusion I is true
(b) if only Conclusion II is true
(c) if either Conclusion I or II is true
(d) if neither Conclusion I nor II is true
(e) if both Conclusions I and II are true

***Ex* 24 Statements** Q @ R, R @ M, M © D
Conclusions I. D © R II. D © Q

***Ex* 25 Statements** M @ K, K © R, R © P © D
Conclusions I. P @ K II. P @ M

***Ex* 26 Statements** T © M, M = P, P © R
Conclusions I. R @ T II. T © R

***Ex* 27 Statements** P @ Q, Q © K, K@ M
Conclusions I. M = Q II. M $\underline{\underline{\text{©}}}$ Q

Solutions (Example Nos. 24-28)

Given that, $A \text{ © } B \Rightarrow A > B$ *i.e.,* © represents >

$A \underline{\underline{\text{©}}} B \Rightarrow A \geq B$ *i.e.,* $\underline{\underline{\text{©}}}$ represents ≥

$A = B \Rightarrow A = B$ *i.e.,* = represents =

$A @ B \Rightarrow A < B$ *i.e.,* @ represents <

$A \underline{\underline{@}} B \Rightarrow A \leq B$ *i.e.,* $\underline{\underline{@}}$ represents ≤

24. (*d*) According to the question,

$Q @ R \Rightarrow Q < R$ ...(i)

$R @ M \Rightarrow R < M$ ...(ii)

$M \text{ © } D \Rightarrow M > D$ ...(iii)

On combining the statements (i), (ii) and (iii), we get

$Q < R < M > D$

Conclusions I. $D \text{ © } R \Rightarrow D > R$ (false)

II. $D \text{ © } Q \Rightarrow D > Q$ (false)

So, it is clear that neither Conclusion I nor II is true.

25. (*a*) According to the question,

$M @ K \Rightarrow M < K$ ...(i)

$K \text{ © } R \Rightarrow K > R$ ...(ii)

$R \text{ © } P \Rightarrow R > P$ ...(iii)

On combining the statements (i), (ii) and (iii), we get

$M < K > R > P$

Conclusions I. $P @ K \Rightarrow P < K$ (true)

II. $P @ M \Rightarrow P < M$ (false)

So, it is clear that only Conclusion I is true.

26. (*e*) According to the question,

$T \text{ © } M \Rightarrow T > M$ ...(i)

$M = P \Rightarrow M = P$ ...(ii)

$P \text{ © } R \Rightarrow P > R$ ...(iii)

On combining the statements (i), (ii) and (iii), we get

$T > M = P > R$

Conclusions I. $R @ T \Rightarrow R < T$ (true)

II. $T \text{ © } R \Rightarrow T > R$ (true)

So, it is clear that both Conclusions I and II are true.

27. (*d*) According to the question, $P @ Q \Rightarrow P < Q$ ...(i)

$Q \text{ © } K \Rightarrow Q > K$ ...(ii)

$K @ M \Rightarrow K < M$ ...(iii)

On combining the statements (i), (ii), and (iii), we get

$P < Q > K < M$

Conclusions I. $M = Q \Rightarrow M = Q$ (false)

II. $M \underline{\underline{\text{©}}} Q \Rightarrow M \geq Q$ (false)

So, it is clear that neither Conclusion I nor II is true.

Practice Corner **9.5**

Build your Confidence...

Directions (Q. Nos. 1-6) In the following questions, the symbols, ©, %, $ and @ are used with the following meaning as illustrated below.

P ©Q means P is either smaller than or equal to Q.

P % Q means P is smaller than Q.

P @ Q means P is equal to Q.

P * Q means P is either greater than or equal to Q.

P $ Q means P is greater than Q.

Now, in each of the following questions, assuming the given statements to be true, find which of the two Conclusions I and II given below them is/are definitely true?

Give answer

(a) if only Conclusion I is true
(b) if only Conclusion II is true
(c) if either Conclusion I or II is true
(d) if neither Conclusion I nor II is true
(e) if both Conclusion I and II are true

1. Statements M % T, T $ K, K © D
Conclusions I. T $ D II. D $ M

2. Statements F @ B, B % N, N $ H
Conclusions I. N $ F II. H $ F

3. Statements R * M, M @ K, K © J
Conclusions I. J $ M II. J @ M

4. Statements B $ N, N * R, R @ K
Conclusions I. K © N II. B $ K

5. Statements J © K, K $ N, N * D
Conclusions I. J % N II. D % K

6. Statements R @ D, D © M, M $ T
Conclusions I. T % D II. M * R

Directions (Q. Nos. 7-11) In the following questions, the symbols @, $, #, © and % are used with the following meaning as illustrated below. **[IBPS (PO) 2012]**

'P $ Q' means 'P is not smaller than Q'.

'P # Q' means 'P is neither smaller than nor equal to Q'.

'P @ Q' means 'P is neither greater than nor smaller than Q'.

P © Q' means 'P is neither greater than nor equal to Q'.

'P % Q' means 'P is not greater than Q.'

Now, in each of the following questions, assuming the given statements to be true, find which of the four Conclusions I, II, III and IV given below them is/are definitely true and give your answer accordingly.

7. Statements R # J, J $ D, D @ K, K % T
Conclusions I. T # D II. T @ D
III. R # K IV. J $ T

(a) Either I or II is true
(b) Only III is true
(c) III and IV are true
(d) Either I or II and III are true
(e) None of these

8. Statements T % R, R $ M, M @ D, D© H
Conclusions I. D % R II. H # R
III. T © M IV. T % D

(a) Only I is true
(b) I and IV are true
(c) I and II are true
(d) II and IV are true
(e) None of these

9. Statements M @ B, B # N, N $ R, R© K
Conclusions I. K # B II. R © B
III. M $ R IV. N © M

(a) I and III are true
(b) I and II are true
(c) II and IV are true
(d) II, III and IV are true
(e) None of these

10. Statements F # H, H @ M, M© E, E $ J
Conclusions I. J © M II. E # H
III. M © F IV. F # E

(a) I and II are true
(b) II and III are true
(c) I, II and III are true
(d) II, III and IV are true
(e) None of these

11. Statements D % A, A @ B, B© K, K % M
Conclusions I. B $ D II. K # A
III. M # B IV. A© M

(a) I, II and IV are true
(b) I, II and III are true
(c) II, III and IV are true
(d) I, III and IV are true
(e) All are true

Directions (Q. Nos. 12-16) In the questions given below, some relationship have been expressed through symbols as show below. Study the meaning of these symbols and pickup the correct answer from the answer choices for each of the questions below. **[CMAT 2013]**

ϕmeans ‘ less than’
– means ‘ equal to’.
× mens ‘not less than’
Δ means ‘not greater than’
+ means ‘not equal to’
= means ‘greater than’.

12. $X \phi Y + Z$ implies

(a) $X - Y = Z$ (b) $X \times Y - Z$ (c) $X \Delta Y \phi Z$ (d) $X + Y = Z$

13. $X \phi Y - Z$ implies

(a) $X \times Y - Z$ (b) $X - Y \times Z$ (c) $X + Y \times Z$ (d) $X \times Y = Z$

14. $X - Y + Z$ implies

(a) $X + Y + Z$ (b) $X \phi Y - Z$
(c) $X - Y \phi Z$ (d) None of these

15. $X - Y = Z$ implies

(a) $X + Y + Z$
(b) $X \Delta Y \times Z$
(c) $X + Y \phi Z$
(d) $X + Y \times Z$

16. $X = Y = Z$ does not implies

(a) $Y \phi X = Z$ (b) $Z \phi Y \phi X$
(c) $Z \phi X = Y$ (d) None of these

Directions (Q. Nos. 17-22) In the following questions, the symbols @, ©, $, % and # are used with the following meaning as illustrated below.

‘P $ Q’ means ‘P is not greater than Q.’
‘P @ Q’ means ‘P is neither smaller than nor equal to Q’.
‘P # Q’ means ‘P is not smaller than Q.’
‘P © Q’ means ‘P is neither greater than nor equal to Q.’
‘P % Q’ means ‘P is neither smaller than nor greater than Q’

Now, in each of the following questions, assuming the given statements to be true, find which of the three Conclusions I, II and III given below them is/are definitely true and give your answer accordingly?

17. Statements D # K, K @ T, T $ M, M % J

Conclusions I. J @ T II. J % T III. D @ T

(a) Only I is true (b) Only II is true
(c) Either I or II is true (d) Either I or II and III are true

18. Statements R @ N, N© D, D $ J, J # B

Conclusions I. R @ J II. J @ N III. B @ D

(a) None is true (b) Only I is true
(c) Only II is true (d) Only III is true

19. Statements W© B, B % V, V $ R, R @ K

Conclusions I. K© B II. R # B III. V @ W

(a) I and II are true (b) I and III are true
(c) II and III are true (d) All III are true

20. Statements H $ M, M # T, T @ D, D© R

Conclusions I. D© M II. R @ M III. H $ T

(a) None is true (b) Only I is true
(c) Only II is true (d) Only III is true

21. Statements B % J, J @ K, K© T, T $ F

Conclusions I. F @ K II. B @ K III. B @ F

(a) I and II are true (b) I and III are true
(c) II and III are true (d) All are true

22. Statements F # B, B $ M, M @ K, K© N

Conclusions I. N @ M II. F $ M III. K© B

(a) Only I is true (b) Only II is true
(c) Only III is true (d) None is true

Directions (Q. Nos. 23-27) In the following questions, the symbols @, ©, $, % and # are used with the following meaning as illustrated below.

‘A $ B’ means ‘A is not smaller than B’.
‘A # B’ means ‘A is not greater than B’.
‘A @ B’ means ‘A is neither smaller than nor equal to B’.
‘A © B’ means ‘A is neither smaller than nor greater than B.’
‘A % B’ means ‘A is neither greater than nor equal to B’.

Now, in each of the following questions, assuming the given statements to be true, find which of the three Conclusions I, II and III given below them is/are definitely true and give your answer accordingly?

23. Statements H % J, J © N, N @ R

Conclusions I. R % J II. H @ J III. N @ H

(a) Only II and true
(b) I and III are true
(c) Only I is true
(d) Only III is true

24. Statements M @ J, J $ T, T © N

Conclusions I. N # J II. T % M III. M @ N

(a) I and II are true
(b) II and III are true
(c) I and II are true
(d) All are true

25. Statements D © K, K # F, F @ P

Conclusions I. P @ D II. K # P III. F $ D

(a) Only II is true
(b) I and II are true
(c) Only III is true
(d) II and III are true

26. Statements R # D, D $ M, M © N

Conclusions I. R # M II. N # D III. N $ R

(a) Only I is true
(b) Only II is true
(c) Only III is true
(d) None is true

27. Statements K © P, P @ Q, Q $ R

Conclusions I. K @ R II. R % P III. Q % K

(a) I and II are true
(b) II and III are true
(c) Only III is true
(d) All are true

Directions (Q. Nos. 28-32) In the following questions, the symbol ©, $\underline{\underline{\text{©}}}$, @, $\underline{\underline{\text{@}}}$ = are used as follows.

A © B means A > B
A $\underline{\underline{\text{©}}}$ B means $A \geq B$
$A = B$ means $A = B$
A @ B means $A < B$
A $\underline{\underline{\text{@}}}$ B means $A \leq B$

Now, in each of the following questions, assuming the given statements to be true, find which of the two Conclusions I and II given below them is/are definitely true.

Give answer
(a) if only Conclusion I is true
(b) if only Conclusion II is true
(c) if either Conclusion I or II is true
(d) if neither Conclusion I nor II is true
(e) if both Conclusions I and II are true

28. Statements B @ K, K @ M, M @ Z

Conclusions I. B @ Z II. B = Z

29. Statements R © B, B $\underline{\underline{\text{©}}}$ M

Conclusions I. R © M II. R @ M

30. Statements M $\underline{\underline{\text{@}}}$ R, Q $\underline{\underline{\text{©}}}$ P, P = R

Conclusions I. M @ P II. M = P

31. Statements M @ N, N $\underline{\underline{\text{@}}}$ R

Conclusions I. R $\underline{\underline{\text{©}}}$ M II. R © M

32. Statements P $\underline{\underline{\text{@}}}$ Q, Q $\underline{\underline{\text{©}}}$ M, M $\underline{\underline{\text{@}}}$ T

Conclusions I. P $\underline{\underline{\text{@}}}$ T II. P $\underline{\underline{\text{©}}}$ T

Directions (Q. Nos. 33-35) In the following questions, the symbol @, $\underline{\underline{\text{@}}}$, = , © and $\underline{\underline{\text{©}}}$ are used with following meanings.

P @ Q ⇒ P is greater than Q.
P © Q ⇒ P is smaller than Q.
P = Q ⇒ P is equal to Q.
P $\underline{\underline{\text{@}}}$ Q ⇒ P is either greater than or equal to Q.
P $\underline{\underline{\text{©}}}$ Q ⇒ P is either smaller than or equal to Q.

Give answer
(a) if only Conclusion I is true
(b) if only Conclusion II is true
(c) if either Conclusion I or II is true
(d) if neither Conclusion I nor II is true
(e) if both Conclusion I and II are true

33. Statements B @ V, K © C, C $\underline{\underline{\text{©}}}$ B

Conclusions I. V @ C II. B @ K

34. Statements K @ T, S = K, T © R

Conclusions I. S @ T II. T = R

35. Statements U = M, P $\underline{\underline{\text{@}}}$ U, M $\underline{\underline{\text{@}}}$ B

Conclusions I. P = B II. P @ B

Directions (Q. Nos. 36-40) In the following questions, the symbols @, $, *, # and δ are used with the following meaning as illustrated below. **[SBI (PO) 2010]**

'P $ Q' means 'P is not smaller than Q'.

'P @ Q' means 'P is neither smaller than nor equal to Q

'P # Q' means 'P is neither greater than nor equal to Q'.

'P δ Q' means 'P is neither greater than nor smaller than Q.'

'P *Q' means 'P is not greater than Q.

Now, in each of the following questions assuming the given statements to be true, find which of the four Conclusions I, II, III and IV given below them is/are definitely true and give your answer accordingly?

36. Statements H @ T, T # F, F δ E, E * V

Conclusions I. V $ F   II. E @ T   III. H @ V   IV. T # V

(a) I, II and III are true
(b) I, II and IV are true
(c) II, III and IV are true
(d) I, III and IV are true
(e) All are true

37. Statements D # R, R * K, K @ F, F $ J

Conclusions I. J # R   II. J # K   III. R # F   IV. K @ D

(a) I, II and III are true
(b) II, III and IV are true
(c) I, III and IV are true
(d) All are true
(e) None of these

38. Statements N δ B, B $ W, W # H, H * M

Conclusions I. M @ W   II. H @ N   III. W δ N   IV. W # N

(a) Only I is true
(b) Only III is true
(c) Only IV is true
(d) Either III or IV is true
(e) Either III or IV and I are true

39. Statements R * D, D $ J, J # M, M @ K

Conclusions I. K # J   II. D @ M   III. R # M   IV. D @ K

(a) None is true
(b) Only I is true
(c) Only II is true
(d) Only III is true
(e) Only IV is true

40. Statements M $ K, K @ N, N * R, R # W

Conclusions I. W @ K   II. M $ R   III. K @ W   IV. M @ N

(a) I and II are true
(b) I, II and III are true
(c) III and IV are true
(d) II, III and IV are true
(e) None of these

Directions (Q. Nos. 41-42) In each of the following question, find the relationship that can definitely be deduced on the basis of the relations given. The symbols used to define the relationship are as follows.

@ means 'greater than'
# It eans 'less than'
$ means 'not' equal to'
% means 'equal to'

41. If it is given that, 3 M % 2 N and N % 30, then

(a) @ M
(b) M #
(c) 2 % M
(d) None of these

42. If it is given that, N @ P, P # 0, 0 @ M and N % M, then

(a) O @ N
(b) O # N
(c) O $ N
(d) None of these

Response & Interpretations **(9.5)**

Solutions (Q. Nos. 1-6)

Given that, P © Q ⇒ P ≤ Q *i.e.,* © represents ≤
P * Q ⇒ P ≥ Q *i.e.,* * represents ≥
P % Q ⇒ P < Q *i.e.,* % represents <
P $ Q ⇒ P > Q *i.e.,* $ represents >
P @ Q ⇒ P = Q *i.e.,* @ represents =

1. (*d*) According to the question,

M % T ⇒ M< T ...(i)
T $ K ⇒ T> K ...(ii)
K © D ⇒ K≤ D ...(iii)

On combining the statements (i), (ii) and (iii), we get

M< T> K≤ D

Conclusions I. T $ D ⇒ T> D (false)
II. D $ M ⇒ D> M (false)

So, it is clear that neither Conclusion I nor II is true.

2. (*a*) According to the question,

$F @ B \Rightarrow F = B$ …(i)
$B \% N \Rightarrow B < N$ …(ii)
$N \$ H \Rightarrow N > H$ …(iii)

On combining the statements (i), (ii) and (iii), we get

$$F = B < N > H$$

Conclusions I. $N \$ F \Rightarrow N > F$ (true)
II. $H \$ F \Rightarrow H > F$ (false)

So, it is clear that only Conclusion I is true.

3. (*c*) According to the question,

$R * M \Rightarrow R \geq M$ …(i)
$M @ K \Rightarrow M = K$ …(ii)
$K \copyright J \Rightarrow K \leq J$ …(iii)

On combining the statements (i), (ii) and (iii), we get

$$R \geq M = K \leq J$$

Conclusions I. $J \$ M \Rightarrow J > M$ (may be true)
II. $J @ M \Rightarrow J = M$ (may be true)

So, it is clear that either Conclusion I or II is true.

4. (*e*) According to the question,

$B \$ N \Rightarrow B > N$ …(i)
$N * R \Rightarrow N \geq R$ …(ii)
$R @ K \Rightarrow R = K$ …(iii)

On combining the statements (i), (ii) and (iii), we get

$$B > N \geq R = K$$

Conclusions I. $K \copyright N \Rightarrow K \leq N$ (true)
II. $B \$ K \Rightarrow B > K$ (true)

So, it is clear that both the Conclusion I and II is true.

5. (*b*) According to the question,

$J \copyright K \Rightarrow J \leq K$ …(i)
$K \$ N \Rightarrow K > N$ …(ii)
$N * D \Rightarrow N \geq D$ …(iii)

On combining the statements (i), (ii) and (iii), we get

$$J \leq K > N \geq D$$

Conclusions I. $J \% N \Rightarrow J < N$ (false)
II. $D \% K \Rightarrow D < K$ (true)

So, it is clear that only Conclusion II is true.

6. (*b*) According to the question,

$R @ D \Rightarrow R = D$ …(i)
$D \copyright M \Rightarrow D \leq M$ …(ii)
$M \$ T \Rightarrow M > T$ …(iii)

On combining the statements (i), (ii) and (iii), we get

$$R = D \leq M > T$$

Conclusions I. $T \% D \Rightarrow T < R$ (false)
II. $M * R \Rightarrow M \geq R$ (true)

So, it is clear that only Conclusion II is true.

Solutions (Q. Nos. 7-11)

Given that, $P \$ Q \Rightarrow P \geq Q$ *i.e.,* \$ represents $\geq$
$P \copyright Q \Rightarrow P < Q$ *i.e.,* © represents $<$
$P \# Q \Rightarrow P > Q$ *i.e.,* # represents $>$
$P \% Q \Rightarrow P \leq Q$ *i.e.,* % represents $\leq$
$P @ Q \Rightarrow P = Q$ *i.e.,* @ represents $=$

7. (*d*) According to the question,

$R \# J \Rightarrow R > J$ …(i)
$J \$ D \Rightarrow J \geq D$ …(ii)
$D @ K \Rightarrow D = K$ …(iii)
$K \% T \Rightarrow K \leq T$ …(iv)

On combining the statements (i),(ii),(iii) and (iv), we get

$$R > J \geq D = K \leq T$$

Conclusions I. $T \# D \Rightarrow T > D$ (either I or II is true)
II. $T @ D \Rightarrow T = D$
III. $R \# K \Rightarrow R > K$ (true)
IV. $J \$ T \Rightarrow J \geq T$ (false)

So, it is clear that either Conclusions I or II and III are true.

8. (*a*) According to the question,

$T \% R \Rightarrow T \leq R$ …(i)
$R \$ M \Rightarrow R \geq M$ …(ii)
$M @ D \Rightarrow M = D$ …(iii)
$D \copyright H \Rightarrow D < H$ …(iv)

On combining the statements (i), (ii), (iii) and (iv), we get

$$T \leq R \geq M = D < H$$

Conclusions I. $D \% R \Rightarrow D \leq R$ (true)
II. $H \# R \Rightarrow H > R$ (false)
III. $T \copyright M \Rightarrow T < M$ (false)
IV. $T \% D \Rightarrow T \leq D$ (false)

So, it is clear that only Conclusion I is true.

9. (*c*) According to the question,

$M @ B \Rightarrow M = B$ …(i)
$B \# N \Rightarrow B > N$ …(ii)
$N \$ R \Rightarrow N \geq R$ …(iii)
$R \copyright K \Rightarrow R < K$ …(iv)

On combining the statements (i), (ii), (iii) and (iv), we get

$$M = B > N \geq R < K$$

Conclusions I. $K \# B \Rightarrow K > B$ (false)
II. $R \copyright B \Rightarrow R < B$ (true)
III. $M \$ R \Rightarrow M \geq R$ (false)
IV. $N \copyright M \Rightarrow N < M$ (true)

So, it is clear that both Conclusions II and IV are true.

10. (*b*) According to the question,

$F \# H \Rightarrow F > H$ …(i)
$H @ M \Rightarrow H = M$ …(ii)
$M \copyright E \Rightarrow M < E$ …(iii)
$E \$ J \Rightarrow E \geq J$ …(iv)

On combining the statements (i), (ii), (iii) and (iv), we get

$$F > H = M < E \geq J$$

Conclusions I. $J \copyright M \Rightarrow J < M$ (false)
II. $E \# H \Rightarrow E > H$ (true)
III. $M \copyright F \Rightarrow M < F$ (true)
IV. $F \# E \Rightarrow F > E$ (false)

So, it is clear that both Conclusions II and III are true.

11. (*e*) According to the question,

$D \% A \Rightarrow D \leq A$ ...(i)

$A @ B \Rightarrow A = B$ ...(ii)

$B \copyright K \Rightarrow B < K$ ...(iii)

$K \% M \Rightarrow K \leq M$ ...(iv)

On combining the statements (i), (ii), (iii) and (iv), we get

$D \leq A = B < K \leq M$

Conclusions I. $B \$ D \Rightarrow B \geq D$ (true)

II. $K \# A \Rightarrow K > A$ (true)

III. $M \# B \Rightarrow M > B$ (true)

IV. $A \copyright M \Rightarrow A < M$ (true)

So, it is clear that all the Conclusions I, II, III and IV are true.

12. (*c*) Clearly, the meaning of the given symbols

$X \phi Y + Z \Rightarrow X < Y \neq Z$

Using the proper notations/symbols in option (c), we get

$X \Delta Y \phi Z$

$\Rightarrow X \ngtr Y < Z$

$\Rightarrow X < Y \neq Z$

Therefore, $X \phi Y + Z \Rightarrow X \Delta Y \phi Z$

13. (*c*) Clearly, the meaning of the given symbols,

$X \phi Y - Z \Rightarrow X < Y = Z$

Using the proper symbols in option (c), we get

$X + Y \times Z \Rightarrow X \neq Y \nless Z \Rightarrow X < Y = Z$

Therefore, $X \phi Y - Z \Rightarrow X + Y \times Z$

14. (*c*) Clearly, the meaning of the given symbols,

$X - Y + Z \Rightarrow X = Y \neq Z$

Using the proper symbols in option (c), we get

$X - Y \phi Z \Rightarrow X = Y < Z \Rightarrow X = Y \neq Z$

Therefore, $X - Y + Z \Rightarrow X - Y \phi Z$

15. (*b*) Clearly, the meaning of the given symbols,

$X - Y = Z \Rightarrow X = Y > Z$

Using the proper symbols in option (b), we get

$X \Delta Y \times Z \Rightarrow X \ngtr Y \nless Z \Rightarrow X = Y > Z$

Therefore, $X - Y = Z \Rightarrow X \Delta Y \times Z$

16. (*b*) Clearly, the meaning of the given symbols,

$X = Y = Z \Rightarrow X > Y > Z$ *i.e..,* $X > Y$

Using the proper symbols in option (b), we get

$Z \phi Y \phi X \Rightarrow Z < Y < X \Rightarrow X > Y > Z$

Therefore, $X = Y = Z \Rightarrow Z \phi Y \phi X$

Solutions (Q. Nos. 17-22)

Given that,

$P \$ Q \Rightarrow P \leq Q$ *i.e.,* \$ represents ≤

$P @ Q \Rightarrow P > Q$ *i.e.,* @ represents >

$P \# Q \Rightarrow P \geq Q$ *i.e.,* # represents ≥

$P \copyright Q \Rightarrow P > Q$ *i.e.,* © represents <

$P \% Q \Rightarrow P = Q$ *i.e.,* % represents =

17. (*d*) According to the question,

$D \# K \Rightarrow D \geq K$ ...(i)

$K @ T \Rightarrow K > T$ ...(ii)

$T \$ M \Rightarrow T \leq M$ ...(iii)

$M \% J \Rightarrow M = J$ ...(iv)

On combining the statements (i), (ii), (iii) and (iv), we get

$D \geq K > T \leq M = J$

Conclusions I. $J @ T \Rightarrow J > T$ (either I or II is true)

II. $J \% T \Rightarrow J = T$

III. $D @ T \Rightarrow D > T$ (true)

So, it is clear that either Conclusions I or II and III are true.

18. (*c*) According to the question,

$R @ N \Rightarrow R > N$ ...(i)

$N \copyright D \Rightarrow N < D$ ...(ii)

$D \$ J \Rightarrow D \leq J$ ...(iii)

$J \# B \Rightarrow J \geq B$ ...(iv)

On combining the statements (i),(ii), (iii) and (iv), we get

$R > N < D \leq J \geq B$

Conclusions I. $K @ J \Rightarrow R > J$ (false)

II. $J @ N \Rightarrow J > N$ (true)

III. $B @ D \Rightarrow B > D$ (false)

So, it is clear that only Conclusion II is true.

19. (*c*) According to the question,

$W \copyright B \Rightarrow W < B$ ...(i)

$B \% V \Rightarrow B = V$ ...(ii)

$V \$ R \Rightarrow V \leq R$ ...(iii)

$R @ K \Rightarrow R > K$ ...(iv)

On combining the statements (i),(ii),(iii) and (iv), we get

$W < B = V \leq R > K$

Conclusions I. $K \copyright B \Rightarrow K < B$ (false)

II. $R \# B \Rightarrow R \geq B$ (true)

III. $V @ W \Rightarrow V > W$ (true)

So, it is clear that both Conclusions II and III are true.

20. (*b*) According to the question,

$H \$ M \Rightarrow H \leq M$ ...(i)

$M \# T \Rightarrow M \geq T$ ...(ii)

$T @ D \Rightarrow T > D$ ...(iii)

$D \copyright R \Rightarrow D < R$ ...(iv)

On combining the statements (i), (ii), (iii) and (iv), we get

$H \leq M \geq T > D < R$

Conclusions I. $D \copyright M \Rightarrow D < M$ (true)

II. $R @ M \Rightarrow R > M$ (false)

III. $H \$ T \Rightarrow H \leq T$ (false)

So, it is clear that only Conclusion I is true.

21. (*a*) According to the question, $B \% J \Rightarrow B = J$ ...(i)

$J @ K \Rightarrow J > K$ ...(ii)

$K \copyright T \Rightarrow K < T$ ...(iii)

$T \$ F \Rightarrow T \leq F$ ...(iv)

On combining the statements (i), (ii), (iii) and (iv), we get

$B = J > K < T \leq F$

Conclusions I. $F @ K \Rightarrow F > K$ (true)

II. $B @ K \Rightarrow B > K$ (true)

III. $B @ F \Rightarrow B > F$ (false)

So, it is clear that both Conclusions I and II are true.

22. (*d*) According to the question,

$F \# B \Rightarrow F \geq B$ ...(i)

$B \$ M \Rightarrow B \leq M$ ...(ii)

$M @ K \Rightarrow M > K$ ...(iii)

$K \copyright N \Rightarrow K < N$ ...(iv)

On combining the statements (i), (ii), (iii) and (iv), we get

$F \geq B \leq M > K < N$

Conclusions I. $N @ M \Rightarrow N > M$ (false)

II. $F \$ M \Rightarrow F \leq M$ (false)

III. $K \copyright B \Rightarrow K < B$ (false)

So, it is clear that none of the conclusions is true.

Solutions (Q. Nos. 23-27)

Given that,

$A \$ B \Rightarrow A \geq B$ *i.e.,* \$ represents $\geq$

$A \# B \Rightarrow A \leq B$ *i.e.,* # represents $\leq$

$A @ B \Rightarrow A > B$ *i.e.,* @ represents $>$

$A \copyright B \Rightarrow A = B$ *i.e.,* © represents $=$

$A \% B \Rightarrow A < B$ *i.e.,* % represents $<$

23. (*b*) According to the question,

$H \% J \Rightarrow H < J$ ...(i)

$J \copyright N \Rightarrow J = N$ ...(ii)

$N @ R \Rightarrow N > R$ ...(iii)

On combining the statements (i), (ii) and (iii), we get

$H < J = N > R$

Conclusions I. $R \% J \Rightarrow R < J$ (true)

II. $H @ J \Rightarrow H > J$ (false)

III. $N @ H \Rightarrow N > H$ (true)

So, it is clear that both Conclusions I and III are true.

24. (*d*) According to the question,

$M @ J \Rightarrow M > J$ ...(i)

$J \$ T \Rightarrow J \geq T$ ...(ii)

$T \copyright N \Rightarrow T = N$ ...(iii)

On combining the statements (i), (ii) and (iii), we get

$M > J \geq T = N$

Conclusions I. $N \# J \Rightarrow N \leq J$ (true)

II. $T \% M \Rightarrow T < M$ (true)

III. $M @ N \Rightarrow M > N$ (true)

So, it is clear that all the Conclusions I, II and III are true.

25. (*c*) According to the question,

$D \copyright K \Rightarrow D = K$ ...(i)

$K \# F \Rightarrow K \leq F$ ...(ii)

$F @ P \Rightarrow F > P$ ...(iii)

On combining the statements (i), (ii) and (iii), we get

$D = K \leq F > P$

Conclusions I. $P @ D \Rightarrow P > D$ (false)

II. $K \# P \Rightarrow K \leq P$ (false)

III. $F \$ D \Rightarrow F \geq D$ (true)

So, it is clear that only Conclusion III is true.

26. (*b*) According to the question,

$R \# D \Rightarrow R \leq D$ ...(i)

$D \$ M \Rightarrow D \geq M$ ...(ii)

$M \copyright N \Rightarrow M = N$ ...(iii)

On combining the statements (i), (ii) and (iii), we get

$R \leq D \geq M = N$

Conclusions I. $R \# M \Rightarrow R \leq M$ (false)

II. $N \# D \Rightarrow N \leq D$ (true)

III. $N \$ R \Rightarrow N \geq R$ (false)

So, it is clear that only Conclusion II is true.

27. (*d*) According to the question,

$K \copyright P \Rightarrow K = P$ ...(i)

$P @ Q \Rightarrow P > Q$ ...(ii)

$Q \$ R \Rightarrow Q \geq R$ ...(iii)

On combining the statements (i), (ii) and (iii), we get

$K = P > Q \geq R$

Conclusions I. $K @ R \Rightarrow K > R$ (true)

II. $R \% P \Rightarrow R < P$ (true)

III. $Q \% K \Rightarrow Q < K$ (true)

So, it is clear that all the Conclusions I, II and III are true.

Solutions (Q. Nos. 28-32)

Given that,

$A \copyright B \Rightarrow A > B$ *i.e.,* © represents $>$

$A \underset{=}{\copyright} B \Rightarrow A \geq B$ *i.e.,* $\underset{=}{\copyright}$ represents $\geq$

$A = B \Rightarrow A = B$ *i.e.,* $=$ represents $=$

$A @ B \Rightarrow A < B$ *i.e.,* @ represents $<$

$A \underset{=}{@} B \Rightarrow A \leq B$ *i.e.,* $\underset{=}{@}$ represents $\leq$

28. (*a*) According to the question, $B @ K \Rightarrow B < K$ ...(i)

$K @ M \Rightarrow K < M$ ...(ii)

$M @ Z \Rightarrow M < Z$ ...(iii)

On combining the statements (i), (ii) and (iii), we get

$B < K < M < Z$

Conclusions I. $B @ Z \Rightarrow B < Z$ (true)

II. $B = Z \Rightarrow B = Z$ (false)

So, it is clear that only Conclusion I is true.

29. (*a*) According to the question,

R © B ⇒ R > B ...(i)
B $\underline{\underline{\copyright}}$ M ⇒ B ≥ M ...(ii)

On combining the statements (i) and (ii), we get

R > B ≥ M

Conclusions I. R © M ⇒ R > M (true)
II. R @ M ⇒ R < M (false)

So, it is clear that only Conclusion I is true.

30. (*c*) According to the question,

M $\underline{\underline{@}}$ R ⇒ M ≤ R ...(i)
Q $\underline{\underline{\copyright}}$ P ⇒ Q ≥ P ...(ii)
P = R ⇒ P = R ...(iii)

On combining statements (i), (ii) and (iii), we get

M ≤ R = P ≤ Q

Conclusions I. M @ P ⇒ M < P (Either I or II is true) (may be)
II. M = P ⇒ M > P (may be)

So, it is clear that either Conclusion I or II is true.

31. (*b*) According to the question,

M @ N ⇒ M < N ...(i)
N $\underline{\underline{@}}$ R ⇒ N ≤ R ...(ii)

On combining the statements (i) and (ii), we get

M < N ≤ R

Conclusions I. R $\underline{\underline{\copyright}}$ M ⇒ R ≥ M (false)
II. R © M ⇒ R > M (true)

So, it is clear that only conclusion II is true.

32. (*d*) According to the question, P $\underline{\underline{@}}$ Q ⇒ P ≤ Q ...(i)

Q $\underline{\underline{\copyright}}$ M ⇒ Q ≥ M ...(ii)
M $\underline{\underline{@}}$ T ⇒ M ≤ T ...(iii)

On combining the statements (i), (ii) and (iii), we get

P ≤ Q ≥ M ≤ T

Conclusions I. P $\underline{\underline{@}}$ T ⇒ P ≤ T (false)
II. P $\underline{\underline{\copyright}}$ T ⇒ P ≥ T (false)

So, it is clear that neither conclusion I nor II is true.

Solutions (Q. Nos. 33-35)

Given that,

P @ Q ⇒ P > Q *i.e.,* @ represents >
P $\underline{\underline{@}}$ Q ⇒ P ≥ Q *i.e.,* $\underline{\underline{@}}$ represents ≥
P © Q ⇒ P < Q *i.e.,* © represents <
P $\underline{\underline{\copyright}}$ Q ⇒ P ≤ Q *i.e.,* $\underline{\underline{\copyright}}$ represents ≤
P = Q ⇒ P = Q *i.e.,* = represents =

33. (*b*) According to the question,

B @ V ⇒ B > V ...(i)
K © C ⇒ K < C ...(ii)
C $\underline{\underline{\copyright}}$ B ⇒ C ≤ B ...(iii)

On combining the statements (i), (ii) and (iii), we get

K < C ≤ B > V

Conclusions I. V @ C ⇒ V > C (false)
II. B @ K ⇒ B > K (true)

So, it is clear that only Conclusion II is true.

34. (*a*) According to the question,

K @ T ⇒ K > T ...(i)
S = K ⇒ S = K ...(ii)
T © R ⇒ T < R ...(iii)

On combining the statements (i), (ii) and (iii), we get

S = K > T < R

Conclusions I. S @ T ⇒ S > T (true)
II. T = R ⇒ T = R (false)

So, it is clear that only Conclusion I is true.

35. (*c*) According to the question,

U = M ⇒ U = M ...(i)
P $\underline{\underline{@}}$ U ⇒ P ≥ U ...(ii)
M $\underline{\underline{@}}$ B ⇒ M ≥ B ...(iii)

On combining the statements (i), (ii) and (iii), we get

P ≥ U = M ≥ B

Conclusions I. P = B ⇒ P = B (either I or II is true) (may be)
II. P @ B ⇒ P > B (may be)

So, it is clear that either Conclusion I or II is ture.

Solutions (Q. Nos. 36-40)

Given that, P $ Q ⇒ P ≥ Q *i.e.,* $ represents ≥
P @ Q ⇒ P > Q *i.e.,* @ represents >
P # Q ⇒ P < Q *i.e.,* # represents <
P δ Q ⇒ P = Q *i.e.,* δ represents =
P * Q ⇒ P ≤ Q *i.e.,* * represents ≤

36. (*b*) According to the question,

H @ T ⇒ H > T ...(i)
T # F ⇒ T < F ...(ii)
F δ E ⇒ F = E ...(iii)
E * V ⇒ E ≤ V ...(iv)

On combining the statements (i), (ii), (iii) and (iv), we get

H > T < F = E ≤ V

Conclusions I. V $ F ⇒ V ≥ F (true)
II. E @ T ⇒ E > T (true)
III. H @ V ⇒ H > V (false)
IV. T # V ⇒ T < V (true)

So, it is clear that Conclusions I, II and IV are true.

37. (*e*) According to the question,

$D \# R \Rightarrow D < R$ …(i)
$R * K \Rightarrow R \leq K$ …(ii)
$K @ F \Rightarrow K > F$ …(iii)
$F \$ J \Rightarrow F \geq J$ …(iv)

On combining the statements (i), (ii), (iii) and (iv), we get

$$D < R \leq K > F \geq J$$

Conclusions I. $J \# R \Rightarrow J < R$ (false)
II. $J \# K \Rightarrow J < K$ (true)
III. $R \# F \Rightarrow R < F$ (false)
IV. $K @ D \Rightarrow K > D$ (true)

So, it is clear that Conclusions II and IV are true.

38. (*e*) According to the question,

$N \delta B \Rightarrow N = B$ …(i)
$B \$ W \Rightarrow B \geq W$ …(ii)
$W \# H \Rightarrow W < H$ …(iii)
$H * M \Rightarrow H \leq M$ …(iv)

On combining the statements (i), (ii), (iii) and (iv), we get

$$N = B \geq W < H \leq M$$

Conclusions I. $M @ W \Rightarrow M > W$ (true)
II. $H @ N \Rightarrow H > N$ (false)
III. $W \delta N \Rightarrow W = N$ (either III or IV is true)
IV. $W \# N \Rightarrow W < N$

So, it is clear that either Conclusions III or IV and I are true.

39. (*a*) According to the question,

$R * D \Rightarrow R \leq D$ …(i)
$D \$ J \Rightarrow D \geq J$ …(ii)
$J \# M \Rightarrow J < M$ …(iii)
$M @ K \Rightarrow M > K$ …(iv)

On combining the statements (i), (ii), (iii) and (iv), we get

$$R \leq D \geq J < M > K$$

Conclusions I. $K \# J \Rightarrow K < J$ (false)
II. $D @ M \Rightarrow D > M$ (false)
III. $R \# M \Rightarrow R < M$ (false)
IV. $D @ K \Rightarrow D > K$ (false)

So, it is clear that none of the conclusion is true.

40. (*e*) According to the question,

$M \$ K \Rightarrow M \geq K$ …(i)
$K @ N \Rightarrow K > N$ …(ii)
$N * R \Rightarrow N \leq R$ …(iii)
$R \# W \Rightarrow R < W$ …(iv)

On combining the statements (i), (ii), (iii) and (iv), we get

$$M \geq K > N \leq R < W$$

Conclusions I. $W @ K \Rightarrow W > K$ (false)
II. $M \$ R \Rightarrow M \geq R$ (false)
III. $K @ W \Rightarrow K > W$ (false)
IV. $M @ N \Rightarrow M > N$ (true)

So, it is clear that only Conclusion IV is true.

Solutions (Q. Nos. 41-42)

@ means '>' # means '<' $ means '≠' % means '≠'

41. (*c*) Given, 3M % 2N and N % 30

$\Rightarrow 3M = 2N$ and $N = 30$
$\Rightarrow 3M = 2 \times 30$
$\Rightarrow 20 = M \Rightarrow 20 \% M$

42. (*a*) N @ P, P # O, O @ M and N % M

$\Rightarrow N > P, P < O, O > P$ and $N = M$
$\Rightarrow M = N > P < O \Rightarrow O > M = N$
$\Rightarrow O > N \Rightarrow O @ N$

Master Exercise

Take a Leap...

1. If '+' mean '−' , '−' means '×', '×' means '÷' and '÷' means '+' then the value of $16 \times 2 \div 25 + 7 - 4$ is **[CG PSC 2013]**

(a) 104 (b) 5 (c) 22 (d) 4
(e) 0

Directions (Q. Nos 2-3) In these questions, relationship between different elements is shown in the statements are followed by two conclusions. **[Indian Bank (PO) 2011]**

Give answer

(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either Conclusion I or II follows
(d) if neither Conclusion I nor II follows
(e) if both Conclusions I and II follow

2. **Statement** $E < F \le G = H > S$

Conclusions I. $G > S$ II. $F \le H$

3. **Statement** $P \le Q < W = L$

Conclusions I. $L > P$ II. $Q \le L$

4. Find the correct group of signs to solve the equation.

24 * 16 * 8 * 32 **[SSC (CGL) 2013]**

(a) ÷ − = (b) − + = (c) × ÷ = (d) + − =

5. If 'P' denotes '−', 'Q' denotes '÷', 'R' denotes '×' and 'W' denotes '+' , then 48 Q 12 R 10 P 8 W 4 = ? **[UBI (Clerk) 2010]**

(a) 56 (b) 40 (c) 52 (d) 44
(e) None of these

6. If '+' means 'divided by', '−' means 'added to', '×' means 'subtracted from' and '÷' means 'multiplied by', then $18 \times 12 + 4 - 8 \div 2 = ?$ **[Corporation Bank (Clerk) 2009]**

(a) 216 (b) 31
(c) 04 (d) $10\frac{2}{3}$
(e) None of these

7. Which of the following interchanges of numbers would make the given equation correct?

$8 \times 20 \div 3 + 9 - 5 = 38$ **[SSC (CGL) 2013]**

(a) 3, 8 (b) 8, 9
(c) 3, 5 (d) 3, 9

8. Find the group of mathematical signs in the place of * in the given equation $7*7*2*1 = 12$. **[SSC (CGL) 2012]**

(a) × − ÷ (b) + − × (c) × − + (d) + × −

Directions (Q. Nos. 9-11) If '−' denotes '×', '÷' denotes '+' and '+' denotes '−', then what will be the value of the following? **[Uttranchal (GBC) 2012]**

9. $7 \div 3 - 10 \div 15 + 2$

(a) 56 (b) 59
(c) 52 (d) 61
(e) None of these

10. $12 - 3 + 14 \div 5$

(a) 38 (b) 25
(c) 23 (d) 27
(e) None of these

11. $8 \div 9 + 7 \div 6 - 3$

(a) 21 (b) 24
(c) 28 (d) 30
(e) None of these

Directions (Q. Nos. 12-15) In each of these questions, relationship between different elements is shown in the statements. The statements are followed by two conclusions.

Give answer

(a) if only Conclusion I is true
(b) if only Conclusion II is true
(c) if either Conclusion I or II is true
(d) if neither Conclusion I nor II is true
(e) if both the Conclusions I and II are true

12. **Statements** $P > R, R < S \le X, Y = X$

Conclusions I. $P < S$ II. $Y > R$

13. **Statements** $Z = C, B < A = N, C < B$

Conclusions I. $Z < B$ II. $N > Z$

14. **Statements** $T < V = W, X \ge Y, W > X$

Conclusions I. $V > Y$ II. $V < X$

15. **Statements** $J \ge K > P = R < N = S$

Conclusions I. $S \ge P$ II. $J < R$

16. Which of the following interchange of signs would make the given equation correct?

$(20 - 4) \times 4 + 16 = 36$ **[SSC (CGL) 2013]**

(a) + and − (b) − and × (c) × and + (d) ÷ and −

17. Which of the following interchange of signs would make the given equation correct?

$2 \times 3 + 6 - 12 \div 4 = 7$ **[SSC (CGL) 2013]**

(a) × and + (b) + and − (c) + and ÷ (d) − and ÷

18. Put the correct mathematical signs in the following equation from the given alternatives.

33 ? 11 ? 3 ? 6 = 115 **[SSC (CGL) 2013]**

(a) +, −, × (b) ×, ÷, − (c) ÷, ×, × (d) −, ×, +

Directions (Q. Nos. 19-20) If the given interchanges are made in signs and numbers, then which one of the four equations would be correct?

19. Given interchanges signs '+' and '−', numbers '5' and '8'.

(a) $82 - 35 + 55 = 2$ (b) $82 - 35 + 55 = 102$
(c) $85 - 38 + 85 = 132$ (d) $52 - 35 + 55 = 72$

20. Given interchanges signs '+' and '×', numbers '3' and '7'.

(a) $23 + 17 \times 73 = 1241$ (b) $37 + 73 \times 12 = 112$
(c) $23 \times 17 + 37 = 428$ (d) $23 + 17 \times 73 = 388$

21. Select the correct combination of mathematical signs to replace * signs and to balance the given equation.

15 * 24 * 3 * 6 * 17 **[SSC (CGL) 2013]**

(a) + ÷ − = (b) + × = ÷ (c) − × = + (d) − ÷ + =

Directions (Q. Nos. 22-26) Read each statement carefully and answer the following questions. **[SBI (PO) 2013]**

22. Which of the following expressions will be true, if the expression $R > O = A > S < T$ is definitely true?

(a) $O > T$ (b) $S < R$ (c) $T > A$ (d) $S = O$
(e) $T < R$

23. Which of the following symbols should replace the question mark (?) in the given expression in order to make the expressions '$P > A$' as well as '$T < L$' definitely true? P > L ? A ≥ N = T

(a) ≤ (b) > (c) < (d) ≥
(e) Either ≤ or <

24. Which of the following symbols should be placed in the blank spaces, respectively (in the same order from left to right) in order to complete the given expression in such a manner that makes the expressions '$B > N$' as well as '$D \le L$' definitely true?

B _ L _ O _ N _ D

(a) =, =, ≥, ≥ (b) >, ≥, =, > (c) >, <, =, ≤ (d) >, =, =, ≥
(e) >, =, ≥, >

25. Which of the following should be placed in the blank spaces, respectively (in the same order from left to right) in order to complete the given expression in such a manner that makes the expression '$A < P$' definitely false?

_ ≤ _ < _ > _

(a) L, N, P, A (b) L, A, P, N (c) A, L, P, N (e) N, A, P, L
(e) P, N, A, L

26. Which of the following symbols should be placed in the blank spaces, respectively (in the same order from left to right) in order to complete the given expression in such a manner that makes the expressions '$F > N$' and '$U > D$' definitely false?

F_ O _ U _ N _ D

(a) <, <, >, = (b) <, =, =, >
(c) <, =, =, < (d) ≥, = =, ≥
(e) >, >, =, <

Directions (Q. Nos. 27-28) In the following questions, some equations are solved on the basis of a certain system. On the same basis, find out the correct answer for the unsolved equation. **[SSC (10 + 2) 2013]**

27. If $5 \times 6 \times 4 = 456$ and $3 \times 6 \times 5 = 536$, then $4 \times 8 \times 7 = ?$

(a) 748 (b) 478 (c) 847 (d) 784

28. If $782 = 20$ and $671 = 17$, then $884 = ?$

(a) 32 (b) 19 (c) 26 (d) 23

29. Identify one response which would be a corect inference from the given premises stated according to the following symbols

'A' stands for not greater than
'B' stands for equal to
'C' stands for less than
'D' stands for not lees than
'E' stands for not equal to
'F' stands for greater than

Premises (2 M B N) and (2N A 3K) **[SSC (CGL) 2013]**

(a) 2M D 3 K (b) 2M B 3K (c) 2M C 3K (d) 2K B 3N

30. Find the correct group of signs to solve the equation

24 * 16 * 8 * 32 **[SSC (CGL) 2013]**

(a) + − = (b) ÷ − =
(c) − + = (d) × ÷ =

31. Select the correct combination of mathematical signs to replace '*' signs and to balance the given equation.

9*7*2*3*10 **[SSC (10+2) 2013]**

(a) ÷ × + = (b) − + ÷ =
(c) + − × = (d) − ÷ × =

Directions (Q. Nos. 32-35) In each of the following questions, all the equations except one have been solved according to a certain rule. You are required to solve the unsolved equation following the same rule and to choose the correct answer out of the given options.

32. If $8 \times 6 \times 1 = 168$ and $5 \times 2 \times 1 = 125$, then $4 \times 5 \times 7 = ?$

(a) 754 (b) 457 (c) 547 (d) 475

33. If $3 * 8 * 6 = 497$ and $8 * 4 * 2 = 953$, then $6 * 5 * 1 = ?$

(a) 386 (b) 726 (c) 863 (d) 762

34. If 16 (55) 3 and 30 (157) 5, then 9 (?) 25

(a) 335 (b) 125 (c) 232 (d) 342

35. If $4 \times 4 = 6$, $8 \times 8 = 54$ and $9 \times 9 = 71$, then $2 \times 3 = ?$

(a) 4 (b) −6 (c) −4 (d) 5

36. If '+' denotes ÷, '−' denotes ×, '×' denotes − and '÷' denotes +, then $35 + 7 - 5 \div 5 \times 6 = ?$ **[SSC (10 + 2) 2013]**

(a) 36 (b) 24
(c) 20 (d) 14

Directions (Q. Nos. 37-38) In the following questions, the symbols @, #, $, %, * are used with the meanings as given below.

- 'P @ Q' means 'P is not greater than Q'.
- 'P # Q' means 'P is greater than or equal to Q'.
- 'P $ Q' means 'P is neither greater than nor less than Q'.
- 'P % Q' means 'P is less than Q'.
- 'P*Q' means 'P is neither less than nor equal to Q'.

Now, in each of the following questions, assuming the given statements to be true, find which of the three Conclusions I, II and III given below them is/are definitely true?

37. Statements B $ R, R * N, K @ N

Conclusions I. B * K II. K % R III. B # N

(a) All are true (b) Only I is true
(c) I and II are true (d) I and III are true
(e) None of these

38. Statements M % R, R # T, T * N

Conclusions I. N % R II. M % T III. M * N

(a) None is true (b) Only I is true
(c) Only II is true (d) I and III are true

39. Select the correct combination of mathematical signs to replace * signs and to balance the given equation.

$5 * 5 * 5 * 3 * 10$ **[SSC (CGL) 2013]**

(a) × + = × (b) + − × =
(c) + ÷ = × (d) + ÷ × =

40. Some equations are solved by special method, On the basis of it, find the right answer of equation from the given options which is not solved? **[SSC (CGL) 2012]**

$$6 \times 4 \times 3 = 436$$
$$8 \times 4 \times ? = 468$$
$$6 \times 9 \times 8 = 986$$

(a) 3 (b) 4 (c) 5 (d) 6

Directions (Q. Nos. 41-45) If '+' is '×', '−' is '+', '×' is '÷' and '÷' is '−', then answer the following questions based on this information.

41. $21 \div 8 + 2 - 12 \times 3 = ?$

(a) 14 (b) 9 (c) 13.5 (d) 11

42. $6 + 7 \times 3 - 8 \div 20 = ?$

(a) −3 (b) 7 (c) 2 (d) 1

43. $15 \times 5 \div 3 + 1 - 1 = ?$

(a) −1 (b) −2 (c) 3 (d) 1

44. $9 - 3 + 2 \div 16 \times 2 = ?$

(a) 7 (b) 5 (c) 9 (d) 6

45. $6 - 9 + 8 \times 3 \div 20 = ?$

(a) −2 (b) 6 (c) 10 (d) 12

46. If 'P' means '+', 'Q' means '×', 'R' means '÷' and 'S' means '−', then 44 Q 9 R 12 S 6 Q 4 P 16 = ? **[SSC (CGL) 2013]**

(a) 36 (b) 124 (c) 25 (d) 112

47. Which of the following interchange of signs would make the given equation correct? **[SSC (CGL) 2013]**

$$5 + 3 \times 8 - 12 \div 4 = 3$$

(a) + and ÷ (c) + and − (c) − and ÷ (d) + and ×

48. If '+' means '÷', '×' means '+', '−' means '×' and '÷' means '−', then which of the following equation is correct? **[SSC (Multitasking) 2013]**

(a) $36 + 6 - 3 \times 2 = 20$ (b) $36 \times 6 + 3 - 2 < 20$
(c) $36 \times 6 + 3 \times 2 > 20$ (d) $36 + 6 \times 3 + 2 = 20$

49. If $1 + 4 = 9$, $2 + 8 = 18$ and $3 + 6 = 15$, then $7 + 8 = ?$ **[SSC (CGL) April 2014]**

(a) 32 (b) 41 (c) 23 (d) 30

50. Select the correct combination of mathematical signs to replace * signs and to balance the given equation.

$2 * 4 * 3 * 4 * 9$ **[SSC (CGL) April 2014]**

(a) + − = ÷
(b) + × = −
(c) × ÷ − =
(d) × − + =

51. Some equations are solved on the basis of a certain system. Find the correct answer for the unsolved equation on the basis 678 = 366, 567 = 255, 946= ? **[SSC (Multitasking) 2014]**

(a) 334 (b) 499 (c) 699 (d) 634

52. Select the correct combination of mathematical signs to replace * signs and to balance the following equation 6* 4* 12 *12 **[SSC (Multitasking) 2014]**

(a) ÷ − = (b) + − ÷ (c) = − ÷ (d) × − =

Directions (Q. Nos. 53-54) In following questions, some equations are solved on the basis of a certain system. On that basis find out the correct answer for unsolved equation. **[SSC (10+2) 2013]**

53. If $3 \times 9 \times 7 = 379$ and $5 \times 4 \times 8 = 584$, then $1 \times 2 \times 3 = ?$

(a) 123 (b) 231 (c) 213 (d) 132

54. If 526 = 9 and 834 = 9, then 716 = ?

(a) 20 (b) 15 (c) 9 (d) 12

Directions (Q. Nos. 55-56) In the following questions some equations are solved on the basis of a certain system. On the same basis, find out the correct answer for the unsolved equation. **[SSC (CPO) 2013]**

55. If $85 + 25 = 50$ and $97 + 65 = 93$, then $72 + 94 = ?$

(a) 92 (b) 50 (c) 67 (d) 60

56. If 4267 = 10 and 3374 = 9, then 4255 = ?

(a) 12 (b) 10 (c) 20 (d) 8

Directions (Q. Nos. 57-63) In these questions, relationship between different elements is shown in the statements. The statements are followed by conclusions. **[MHA-CET 2012]**

Give answer

(a) if only Conclusion I is true
(b) if only Conclusion II is true
(c) if either Conclusion I or II is true
(d) if neither Conclusion I nor II is true
(e) if both the Conclusions I and II are true

57. Statements $P \geq Q < T$, $R < Q \geq S$, $V \geq T$
Conclusions I. $R \geq P$ II. $S > V$

58. Statements $P \geq Q < T$; $R < Q \geq S$; $V \geq T$
Conclusion I. $S \leq P$ II. $V > R$

59. Statements $H < I \leq J$; $R \geq I > A$
Conclusions I. $H < R$ II. $A > H$

60. Statements $R \geq I \leq J$, $A < I$
Conclusions I. $J > R$ II. $J > A$

61. Statements $J = K \geq L \leq M$, $K < S$, $J > T$
Conclusions I. $L < S$ II. $M > T$

62. Statements $P < R \geq I = C$, $L > E \geq R$
Conclusions I. $E > C$ II. $C = E$

63. Statements $B \leq C = D > E$, $F > C$
Conclusions I. $F \geq B$ II. $C \geq E$

Response & Interpretations (Master Exercise)

1. (*b*) According to the question,

$$\begin{array}{ccccccccc} 16 & \times & 2 & \div & 25 & + & 7 & - & 4 \\ & \downarrow & & \downarrow & & \downarrow & & \downarrow & \\ & \div & & + & & - & & \times & \end{array}$$

$= 16 \div 2 + 25 - 7 \times 4$
$= 8 + 25 - 7 \times 4$
$= 8 + 25 - 28$
$= 33 - 28 = 5$

So, the required value is 5.

2. (*e*) **Statement** $E < F \leq G = H > S$

Conclusions

I. $G > S \rightarrow$ It follows because $G = H$ is greater than S.
II. $F \leq H \rightarrow$ It follows because H is equal to G and $G \geq F$.

So, both Conclusions I and II follow.

3. (*a*) **Statement** $P \leq Q < W = L$

Conclusions

I. $L > P \rightarrow$ It follows
II. $Q \leq L \rightarrow$ It does not follow because L is equal to W and W is only greater than Q.

4. (*d*) Let us check all the options one by one.

From option (a),

$$24 \div 16 - 8 = 32 \Rightarrow \frac{24}{16} - 8 = 32$$

$$\Rightarrow \frac{3}{2} - 8 = 32 \Rightarrow \frac{3-16}{2} = 32$$

$$\Rightarrow \frac{-13}{2} = 32$$

$\therefore$ LHS ≠ RHS

So, option (a) is incorrect.

From option (b),

$$24-16+8=32 \Rightarrow 8+8=32$$

$$\Rightarrow 16=32 \Rightarrow \text{LHS}\neq\text{RHS}$$

So, option (b) is incorrect.

From option (c),

$$24\times16\div8=32 \Rightarrow 24\times2=32$$

$$\Rightarrow 48=32 \Rightarrow \text{LHS}\neq\text{RHS}$$

So, option (c) is incorrect.

From option (d),

$$24+16-8=32 \Rightarrow 40-8=32$$

$$\Rightarrow 32=32 \Rightarrow \text{LHS}=\text{RHS}$$

So, option (d) is correct.

5. (*e*) $\because$ $48\ \theta\ 12\ R\ 10\ P\ 8\ W\ 4=?$

$$\Rightarrow 48\div12\times10-8+4=?$$

$$\Rightarrow 4\times10-8+4=?$$

$$\Rightarrow 40-8+4=?$$

$$\therefore ?=36$$

6. (*b*) Given equation is $18\times12+4-8\div2$.

According to the question, after changing sign equation

$$=18-12\div4+8\times2$$

$$=18-3+16=34-3=31$$

7. (*c*) Let us check all the options one by one.

From option (a),

$$\underset{\substack{\downarrow\\3}}{8}\times20\div\underset{\substack{\downarrow\\8}}{3}+9-5=38$$

$$\Rightarrow 3\times20\div8+9-5=38$$

$$\Rightarrow 3\times\frac{20}{8}+9-5=38$$

$$\Rightarrow 3\times\frac{5}{2}+9-5=38$$

$$\Rightarrow \frac{15}{2}+9-5=38$$

$$\Rightarrow \frac{15+18-10}{2}=38 \Rightarrow \frac{23}{2}=38$$

$$\therefore \text{LHS}\neq\text{RHS}$$

So, option (a) is incorrect.

From option (b),

$$\underset{\substack{\downarrow\\9}}{8}\times20\div3+\underset{\substack{\downarrow\\8}}{9}-5=38$$

$$\Rightarrow 9\times20\div3+8-5=38$$

$$\Rightarrow 9\times\frac{20}{3}+8-5=38$$

$$\Rightarrow 60+8-5=38$$

$$\Rightarrow 68-5=38$$

$$\Rightarrow 63=38$$

$$\therefore \text{LHS}\neq\text{RHS}$$

So, option (b) is incorrect.

From option (c),

$$8\times20\div\underset{\substack{\downarrow\\5}}{3}+9-\underset{\substack{\downarrow\\3}}{5}=38$$

$$\Rightarrow 8\times20\div5+9-3=38$$

$$\Rightarrow 8\times4+9-3=38$$

$$\Rightarrow 32+9-3=38$$

$$\Rightarrow 41-3=38$$

$$\Rightarrow 38=38$$

$$\therefore \text{LHS}=\text{RHS}$$

So, option (c) is correct and there is no need to check option (d).

8. (*b*) Let us check all the options one by one.

From option (a),

$$7\times7-2\div1=12$$

$$\Rightarrow 7\times7-2=12 \Rightarrow 49-2=12$$

$$\Rightarrow 47=12$$

$$\therefore \text{LHS}\neq\text{RHS}$$

So, option (a) is incorrect.

From option (b),

$$7+7-2\times1=12 \Rightarrow 7+7-2=12$$

$$\Rightarrow 14-2=12 \Rightarrow 12=12$$

$$\therefore \text{LHS}=\text{RHS}$$

So, option (b), is correct and there is no need to check other options.

9. (*e*) According to the question,

$$7\ \underset{\substack{\downarrow\\+}}{\div}\ 3\ \underset{\substack{\downarrow\\\times}}{-}\ 10\ \underset{\substack{\downarrow\\+}}{\div}\ 15\ \underset{\substack{\downarrow\\-}}{+}\ 2$$

$$=7+3\times10+15-2$$

$$=7+30+15-2=50$$

10. (*d*) According to the question,

$$12\ \underset{\substack{\downarrow\\\times}}{-}\ 3\ \underset{\substack{\downarrow\\-}}{+}\ 14\ \underset{\substack{\downarrow\\+}}{\div}\ 5$$

$$=12\times3-14+5=36+5-14=41-14=27$$

11. (*c*) According to the question,

$$8\ \underset{\substack{\downarrow\\+}}{\div}\ 9\ \underset{\substack{\downarrow\\-}}{+}\ 7\ \underset{\substack{\downarrow\\+}}{\div}\ 6\ \underset{\substack{\downarrow\\\times}}{-}\ 3$$

$$=8+9-7+6\times3$$

$$=8+9-7+18=28$$

12. (*b*) According to the question,

$P>R$ ...(i)

$R<S\leq X$ ...(ii)

$Y=X$ ...(iii)

On the combining statements (i), (ii) and (iii), we get

$$P>R<S\leq X=Y$$

Conclusions I. $P<S$ (false)

II. $Y>R$ (true)

So, it is clear that only Conclusion II is true.

13. (*e*) According to the question,

$$Z = C \quad \ldots\text{(i)}$$
$$B < A = N \quad \ldots\text{(ii)}$$
$$C < B \quad \ldots\text{(iii)}$$

On combining the statements (i), (ii) and (iii), we get

$$Z = C < B < A = N$$

Conclusions I. $Z < B$ (true)

II. $N > Z$ (frue)

So, it is clear that both Conclusions I and II are true.

14. (*a*) According to the question,

$$T < V = W \quad \ldots\text{(i)}$$
$$X \geq Y \quad \ldots\text{(ii)}$$
$$W > X \quad \ldots\text{(iii)}$$

On combining statements (i), (ii) and (iii) we get

$$T < V = W > X \geq Y$$

Conclusions I. $V > Y$ (true)

II. $V < X$ (false)

So, it is clear that only Conclusion I is true.

15. (*b*) According to the question,

$$J \geq K > P = R < N = S$$

Conclusions I. $S \geq P$ (false)

II. $J > R$ (true)

So, it is clear that only Conclusion I is true.

16. (*d*) $(20 - 4) \times 4 + 16 = 36$

$\Rightarrow \quad (20 \div 4) \times 4 + 16 = 36$

$\Rightarrow \quad 5 \times 4 + 16 = 36$

17. (*a*) $2 \times 3 + 6 - 12 \div 4 = 17$

$\Rightarrow \quad 2 + 3 \times 6 - 12 \div 4 = 17$

$\Rightarrow \quad 2 + 18 - 3 = 17$

18. (*b*) Let us check all the options one by one.

From option (a),

$33 + 11 - 3 \times 6 = 115 \quad \Rightarrow \quad 33 + 11 - 18 = 115$

$\Rightarrow \quad 44 - 18 = 115 \quad \Rightarrow \quad 26 = 115$

$\therefore \quad \text{LHS} \neq \text{RHS}$

So, option (a) is incorrect.

From option (b),

$$33 \times 11 \div 3 - 6 = 115 \quad \Rightarrow \quad 33 \times \frac{11}{3} - 6 = 115$$

$\Rightarrow \quad 121 - 6 = 115 \quad \Rightarrow \quad 115 = 115$

$\therefore \quad \text{LHS} = \text{RHS}$

So, option (b) is correct and there is no need to check other options.

19. (*a*) Let us check all the options one by one.

From option (a),

$$\begin{array}{ccccccccc} 8 & 2 & - & 3 & 5 & + & 5 & 5 & = 2 \\ \downarrow & & \downarrow & & \downarrow & \downarrow & \downarrow & \downarrow & \\ 5 & & + & & 8 & - & 8 & 8 & \end{array}$$

$\Rightarrow \quad 52 + 38 - 88 = 2 \quad \Rightarrow \quad 90 - 88 = 2$

$\Rightarrow \quad 2 = 2 \quad \Rightarrow \quad \text{LHS} = \text{RHS}$

Clearly, option (a) is correct and hence there is no need to check remaining options.

20. (*d*) Let us check all the options one by one.

From option (a),

$$\begin{array}{ccccccccc} 2 & 3 & + & 1 & 7 & \times & 7 & 3 & = 1241 \\ & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow & \downarrow & \\ & 7 & \times & & 3 & + & 3 & 7 & \end{array}$$

$\Rightarrow \quad 27 \times 13 + 37 = 1241$

$\Rightarrow \quad 351 + 37 = 1241$

$\Rightarrow \quad 388 = 1241 \quad \Rightarrow \quad \text{LHS} \neq \text{RHS}$

So, option (a) is incorrect.

From option (b),

$$\begin{array}{ccccccc} 3 & 7 & + & 7 & 3 & \times & 12 = 112 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\ 7 & 3 & \times & 3 & 7 & + & \end{array}$$

$\Rightarrow \quad 73 \times 37 + 12 = 112 \quad \Rightarrow \quad 2701 + 12 = 12$

$\Rightarrow \quad 2713 = 112 \quad \Rightarrow \quad \text{LHS} \neq \text{RHS}$

So, option (b) is incorrect.

From option (c),

$$\begin{array}{ccccccc} 23 & \times & 1 & 7 & + & 3 & 7 = 428 \\ & \downarrow & & \downarrow & \downarrow & \downarrow & \downarrow \\ 7 & + & & 3 & \times & 7 & 3 \end{array}$$

$\Rightarrow \quad 27 + 13 \times 73 = 428 \quad \Rightarrow \quad 27 + 949 = 428$

$\Rightarrow \quad 956 = 428 \quad \Rightarrow \quad \text{LHS} \neq \text{RHS}$

So, Option (c) is incorrect.

From option (d),

$$\begin{array}{cccccccc} 3 & + & 1 & 7 & \times & 7 & 3 & = 388 \\ \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow & \downarrow & \\ 7 & \times & & 3 & + & 3 & 7 & \end{array}$$

$\Rightarrow \quad 27 \times 13 + 37 = 388 \quad \Rightarrow \quad 351 + 37 = 388$

$\Rightarrow \quad 388 = 388 \quad \Rightarrow \quad \text{LHS} = \text{RHS}$

So, Option (d) is correct.

21. (*a*) Let us check all the options one by one.

From option (a),

$15 + 24 \div 3 - 6 = 17$

$\Rightarrow \quad 15 + 8 - 6 = 17$

$\Rightarrow \quad 23 - 6 = 17$

$\Rightarrow \quad 17 = 17$

$\therefore \quad \text{LHS} = \text{RHS}$

So, option (a) is correct and hence, there is no need to check other options.

Solutions (Q. Nos. 22-26)

22. (*b*) $S < R$

23. (*b*) After replacing the symbol

$$P > L > A > N = T$$

Hence, $P > A$ and $T < L$, is definitely true.

24. (*d*) After placing the symbols,

$$B > L = 0 = N \geq D$$

Hence, $B > N$ and $D \leq L$, is definitely true.

25. (*e*) After placing the letters,

$$P \leq N < A > L$$

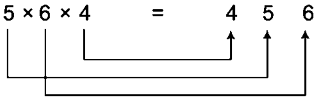
Hence, $A < P$ is false.

26. (*c*) After placing the symbols,

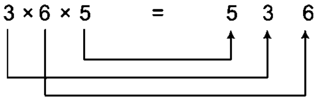
$$F < O = U = N < D$$

Hence, $F > N$ and $U > D$ is definitely false.

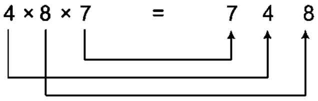
27. (*a*) As,



and



Similarly,



∴ ? = 748

28. (*d*) As, 782 = (7 + 8 + 2) $\underline{+\ 3}$ = 20

and 671 = (6 + 7 + 1) $\underline{+3}$ = 17

Similarly, 884 = (8 + 8 + 4) $\underline{+3}$ = 23

29. (*c*)

A ⇒ ≤	B ⇒ =	C ⇒ <
D ⇒ ≥	E ⇒ ≠	F ⇒ >

2 M B N

⇒ 2M = N ⇒ $M = \frac{N}{2}$

Also 2 N A 3K

⇒ 2N≤ 3K ⇒ 4M≤ 3K

Now checking each option one by one

From option (a), 2M D 3K

⇒ 2M ≥ 3K (false)

From option (b), 2M B 3K

⇒ 2M = 3K (false)

From option (c), 2M C 3K

⇒ 2M < 3K (true)

From option (d), 2K B 3N

⇒ 2K = 3N (false)

30. (*d*) 24 * 16 * 8 * 32

⇒ 24 + 16 − 8 = 32

⇒ 40 − 8 = 32

31. (*c*) Let us check all the options one by one.

From option (a),

$9 \div 7 \times 2 + 3 = 10 \Rightarrow \frac{9}{7} \times 2 + 3 = 10$

$\Rightarrow \frac{18}{7} + 3 = 10 \Rightarrow \frac{18 + 21}{7} = 10$

$\Rightarrow \frac{39}{7} = 10$

⇒ LHS ≠ RHS

So, option (a) is incorrect.

From option (b),

$9 - 7 + 2 \div 3 = 10$

$\Rightarrow 9 - 7 + \frac{2}{3} = 10$

$\Rightarrow \frac{27 - 21 + 2}{3} = 10$

$\Rightarrow \frac{8}{3} = 10$

∴ LHS ≠ RHS

So, option (b) is incorrect.

From option (c),

9 + 7 − 2 × 3 = 10

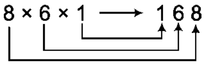
⇒ 9 + 7 − 6 = 10

⇒ 10 = 10

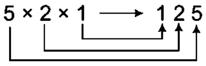
∴ LHS = RHS

So, option (c) is correct and there is no need to check option (d).

32. (*a*) As,



and



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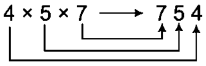
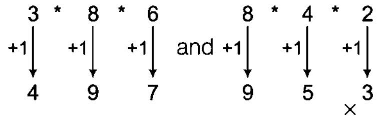
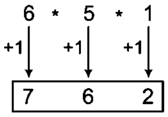


∴ ? = 754

33. (*d*) As,



Similarly,



∴ ? = 762

34. (*c*) As, (16 × 3) + 7 = 55

and (30 × 5) + 7 = 157

Similarly, (9 × 25) + 7 = 232

∴ ? = 232

35. (*c*) As, 4 × 4 ⇒ (4 × 4) − 10 = 6

8 × 8 ⇒ (8 × 8) − 10 = 54

and 9 × 9 ⇒ (9 × 9) − 10 = 71

Similarly, 2 × 3 ⇒ (2 × 3) − 10 = − 4

∴ ? = − 4

36. (*b*) According to the question,

? = 35 + 7 − 5 ÷ 5 × 6
↓ ↓ ↓ ↓
÷ × + −

= 35 ÷ 7 × 5 + 5 − 6

= 5 × 5 + 5 − 6

= 25 + 5 − 6 = 30 − 6 = 24

∴ ? = 24

Solutions (Q. Nos. 37-38)

Given that,

P @ Q ⇒ $P \le Q$ *i.e.,* @ represents ≤
P # Q ⇒ $P \ge Q$ *i.e.,* # represents ≥
P $ Q ⇒ $P = Q$ *i.e.,* $ represents =
P % Q ⇒ $P < Q$ *i.e.,* % represents <
P * Q ⇒ $P > Q$ *i.e.,* * represents >

37. (*c*) According to the question,

B $ R ⇒ $B = R$ ...(i)
R * N ⇒ $R > N$ ...(ii)
K @ N ⇒ $K \le N$ ...(iii)

On combining the statements (i), (ii) and (iii), we get

$B = R > N \ge K$

Conclusions I. B * K ⇒ $B > K$ (true)
II. K % R ⇒ $K < R$ (true)
III. B # N ⇒ $B \ge N$ (false)

So, it is clear that Conclusions I and II are true.

38. (*b*) According to the question,

M % R ⇒ $M < R$ ...(i)
R # T ⇒ $R \ge T$ ...(ii)
T * N ⇒ $T > N$ ...(iii)

On combining the statements (i), (ii) and (iii), we get

$M < R \ge T > N$

Conclusions I. N % R ⇒ $N < R$ (true)
II. M % T ⇒ $M < T$ (false)
III. M * N ⇒ $M > N$ (false)

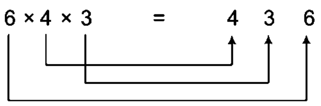
So, it is clear that only Conclusion I is true.

39. (*a*) 5 * 5 * 5 * 3 * 10

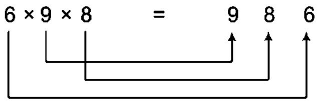
⇒ $5 \times 5 + 5 = 3 \times 10$

⇒ $30 = 30$

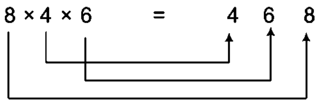
40. (*d*) As,



and



Similarly,



∴ ? = 6

41. (*b*) According to the question,

$$? = 21 \underset{\underset{-}{\downarrow}}{\div} 8 \underset{\underset{\times}{\downarrow}}{+} 2 \underset{\underset{+}{\downarrow}}{-} 12 \underset{\underset{\div}{\downarrow}}{\times} 3$$

$= 21 - 8 \times 2 + 12 \div 3$

$= 21 - 8 \times 2 + 4$

$= 21 - 16 + 4 = 9$

42. (*c*) According to the question,

$$? = 6 \underset{\underset{\times}{\downarrow}}{+} 7 \underset{\underset{\div}{\downarrow}}{\times} 3 \underset{\underset{+}{\downarrow}}{-} 8 \underset{\underset{-}{\downarrow}}{\div} 20$$

$$= 6 \times 7 \div 3 + 8 - 20 = \frac{6 \times 7}{3} + 8 - 20 = 14 + 8 - 20 = 2$$

43. (*d*) According to the question,

$$? = 15 \underset{\underset{\div}{\downarrow}}{\times} 5 \underset{\underset{-}{\downarrow}}{\div} 3 \underset{\underset{\times}{\downarrow}}{+} 1 \underset{\underset{+}{\downarrow}}{-} 1$$

$= 15 \div 5 - 3 \times 1 + 1 = 3 - 3 \times 1 + 1 = 3 - 3 + 1 = 1$

44. (*a*) According to the question,

$$? = 9 \underset{\underset{+}{\downarrow}}{-} 3 \underset{\underset{\times}{\downarrow}}{+} 2 \underset{\underset{-}{\downarrow}}{\div} 16 \underset{\underset{\div}{\downarrow}}{\times} 2$$

$= 9 + 3 \times 2 - 16 \div 2 = 9 + 3 \times 2 - 8 = 9 + 6 - 8 = 7$

45. (*c*) According to the question,

$$? = 6 \underset{\underset{+}{\downarrow}}{-} 9 \underset{\underset{\times}{\downarrow}}{+} 8 \underset{\underset{\div}{\downarrow}}{\times} 3 \underset{\underset{-}{\downarrow}}{\div} 20$$

$= 6 + 9 \times 8 \div 3 - 20$

$= 6 + 9 \times \frac{8}{3} = 20 = 6 + 24 - 20 = 10$

46. (*c*) According to the question,

$$? = 44 \underset{\underset{\times}{\downarrow}}{Q} 9 \underset{\underset{\div}{\downarrow}}{R} 12 \underset{\underset{-}{\downarrow}}{S} 6 \underset{\underset{\times}{\downarrow}}{Q} 4 \underset{\underset{+}{\downarrow}}{P} 16$$

$$= 44 \times 9 \div 12 - 6 \times 4 + 16 = 44 \times \frac{9}{12} - 6 \times 4 + 16$$

$= 33 - 24 + 16 = 49 - 24 = 25$

∴ $? = 25$

47. (*c*) Let us check all the options one by one.

From option (a),

$$5 \underset{\underset{\div}{\downarrow}}{+} 3 \times 8 - 12 \underset{\underset{+}{\downarrow}}{\div} 4 = 3$$

⇒ $5 \div 3 \times 8 - 12 + 4 = 3$

⇒ $\frac{5}{3} \times 8 - 12 + 4 = 3$ ⇒ $\frac{40}{3} - 12 + 4 = 3$

⇒ $\frac{40 - 36}{3} + 4 = 3$ ⇒ $\frac{4}{3} + 4 = 3$ ⇒ LHS ≠ RHS

So, option (a) is incorrect.

From option (b),

$$5 \underset{\underset{-}{\downarrow}}{+} 3 \times 8 \underset{\underset{+}{\downarrow}}{-} 12 \div 4 = 3$$

⇒ $5 - 3 \times 8 + 12 \div 4 = 3$ ⇒ $5 - 3 \times 8 + 3 = 3$

$\Rightarrow \quad 5 - 24 + 3 = 3 \Rightarrow 8 - 24 = 3$

$\Rightarrow \quad -16 = 3 \Rightarrow \text{LHS} \neq \text{RHS}$

So, option (b) is incorrect.

From option (c),

$$5 + 3 \times 8 \;\underset{\div}{\underset{\downarrow}{-}}\; 12 \;\underset{-}{\underset{\downarrow}{\div}}\; 4 = 3$$

$\Rightarrow \quad 5 + 3 \times 8 \div 12 - 4 = 3 \Rightarrow 5 + 3 \times \frac{8}{12} - 4 = 3$

$\Rightarrow \quad 5 + 2 - 4 = 3 \Rightarrow 7 - 4 = 3$

$\Rightarrow \quad 3 = 3 \Rightarrow \text{LHS} = \text{RHS}$

So, option (c) is incorrect and there is no need to check option (d).

48. (*a*) Let us check all the options one by one.

From option (a),

$$36 \;\underset{\div}{\underset{\downarrow}{+}}\; 6 \;\underset{\times}{\underset{\downarrow}{-}}\; 3 \;\underset{+}{\underset{\downarrow}{\times}}\; 2 = 20$$

$\Rightarrow \quad 36 \div 6 \times 3 + 2 = 20 \Rightarrow 6 \times 3 + 2 = 20$

$\Rightarrow \quad 18 + 2 = 20 \Rightarrow 20 = 20 \Rightarrow \text{LHS} = \text{RHS}$

So, option (a) is correct and there is no need to check other options.

49. (*c*) As $1 + 4 \rightarrow 1 + 4 + 4 = 9$

$2 + 8 \rightarrow 2 + 8 + 8 = 18$

and $3 + 6 \rightarrow 3 + 6 + 6 = 15$

Similarly, $7 + 8 \rightarrow 7 + 8 + 8 = 23$

50. (*d*) From option (d), $2 * 4 * 3 * 4 * 9$

$2 \times 4 - 3 + 4 = 9$

$\Rightarrow \quad -3 + 4 = 9 \Rightarrow 9 = 9$

51. (*d*) As, $678 - 312 = 366$ and $567 - 312 = 255$

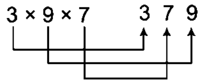
Similarly, $946 - 312 = 634$

52. (*d*) $6 * 4 * 12 * 12$

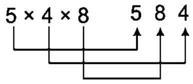
From option (d),

$6 \times 4 - 12 = 12 \Rightarrow 12 = 12$

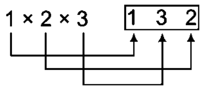
53. (*d*) As,



and



Similarly,



54. (*d*) As in 526, $5 + 6 - 2 = 9$ and in 834, $8 + 4 - 3 = 9$

Similarly in 716, $7 + 6 - 1 = 12$

55. (*b*) As, $85 + 25 \rightarrow 8 \times 5 + 2 \times 5 = 40 + 10 = 50$

and $97 + 65 \rightarrow 9 \times 7 + 6 \times 5 = 63 + 30 = 93$

Similarly, $72 + 94 \rightarrow 7 \times 2 + 9 \times 4 = 14 + 36 = 50$

56. (*b*) As, $4\,2\,6\,7 \longrightarrow 4 \times 6 - 2 \times 7 = 24 - 14 = 10$

and $3\,3\,7\,4 \longrightarrow 3 \times 7 - 3 \times 4 = 21 - 12 = 9$

Similarly, $4\,2\,5\,5 \longrightarrow 4 \times 5 - 2 \times 5 = 20 - 10 = 10$

Solutions (Q. Nos. 57-63)

57. (*b*) I. From given statement,

$R > Q \leq P \Rightarrow R \leq P$

So, Conclusion I is not true.

II. From given statement,

$S \leq Q < T \leq V \Rightarrow S < V$

So, Conclosion II is true.

58. (*e*) I. From given statement,

$P \geq Q \geq S \Rightarrow S \leq P$

So, Conclusion I is true.

II. From given statement,

$V \geq T > Q > R \Rightarrow V > R$

So, Conclusion II is true.

59. (*a*) The given statements are

$H < I \leq J,\ R \geq I > A$

I. From given statement,

$H < I \leq R \Rightarrow H < R$

So, Conclusion I is true.

II. From given statement,

$H < I > A$

So, no relation can be found between H and A.

60. (*b*) I. From given statement,

$R \geq I \leq J$

So, no relation can be established between J and R.

II. From given statement,

$A < I \leq J \Rightarrow J > A$

So, Conclusion II is true.

61. (*a*) I. Given statements are

$J = K \geq L \leq M;\ K < S;\ J > T$

From given statements,

$L \leq K < S \Rightarrow L < S$ (true)

So, Conclusion I is true.

II. From given statements,

$T < J = K \geq L \leq M$

So, no relation can be established between M and T.

62. (*c*) Given statements are

$P < R \geq I = C;\ L > E \geq R$

From given statements,

$E \geq R \geq I = C \Rightarrow E \geq C$

$\Rightarrow \quad E > C$ or $E = C$

So, either Conclusion I or II is true.

63. (*d*) Given statements are

$B \leq C = D > E;\ F > C$

From given statements,

$B \leq C < F$ or $B \leq F$ (false)

and $B \leq C = D > E$

$C \geq E$ (false)

So, neither Conclusion I nor II is true.

10

Venn Diagram

A Venn Diagram is a representation method for all possible relation that can exists between given group of elements in single figure.

Different types of questions covered in this chapter are as follows

- Identification of Relation Based Venn Diagram
- Analysis Based Venn Diagram

Logical Venn diagram depicts the process of representing the things/objects/persons/departments/ organisations/ events etc., through diagrammatic medium by the use of figures such as square, circle, rectangle, parallelogram, trapezium, triangle etc. The representation of various similarity and dissimilarity of the object through the diagram provides a better insight to the candidate, regarding the role and area of representation of various objects.

Based on the variety of questions that are asked in various competitive exams, we have classified these logical Venn diagrams into two types as follows

Type 1 Identification of Relation Based Venn Diagram

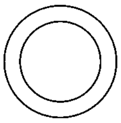
The most common type of questions that we encounter in logical Venn diagram are based on circular Venn diagrams. The questions asked from this type contain, a group of some elements (things) and also some diagrams. Here, a candidate is required to find out the diagram which classify the given group correctly or illustrates the relation between them.

The main motive of asking these type of questions is to analyse the candidate's ability to relate a certain given group of items and illustrate it diagrammatically.

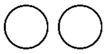
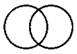
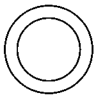
Case I Relation between Two Objects/Things/Places/Persons

Three types of relationships can be established between two objects/things/places/persons/organisations etc., which are given as follows

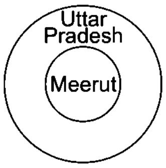
1. The given Venn diagram shows that one class completely belongs to the other class.



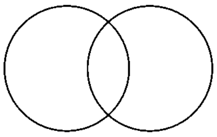
***Ex* 1** Which one of the following diagrams best depicts the relationship between Meerut and Uttar Pradesh?

			None of these
(a)	(b)	(c)	(d)

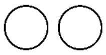
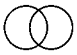
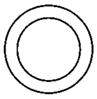
Sol. (*c*) Meerut is a city of Uttar Pradesh. It means Meerut exists completely in Uttar Pradesh. This relation can be expressed as given in option (c).



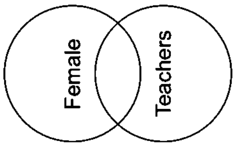
2. The given Venn diagram shows that no one class completely belongs to the other class but they are partly related to each other.



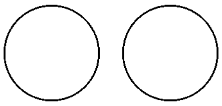
***Ex* 2** Which one of the following diagrams best depicts the relationship between Female and Teacher?

			None of these
(a)	(b)	(c)	(d)

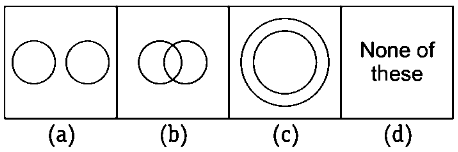
Sol. (*b*) By profession, some females can be teachers, but there can also be some females who are not teachers. Also there can be some male teachers. So, this relation can be best expressed as given in option (b).



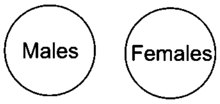
3. The given Venn diagram shows that there is no relation between two classes and no elements are common.



Ex **3** Which one of the following diagrams best depicts the relationship between Males and Females?



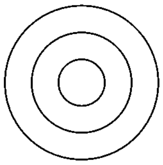
Sol. (*a*) Males and females represents two different genders which are not related to each other in any manner. This can be expressed as given in option (a).



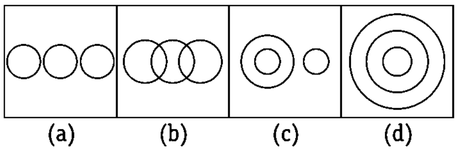
Case II Relations between Three Objects/Things/Places/Persons

Several types of relationships can be established between three objects/things/places/persons/ organisations etc., which are given as follows

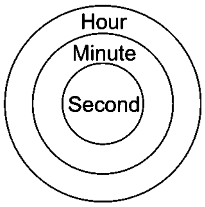
1. The given Venn diagram shows that one class completely belongs to the second class and the second class completely belongs to the third class.



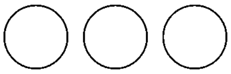
Ex **4** Which one of the following diagrams best depicts the relationship between Seconds, Minutes and Hours?



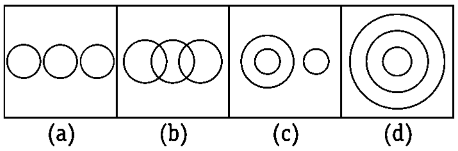
Sol. (*d*) Seconds are the part of minute and minutes are the part of hour. This relation can be expressed by option (d).



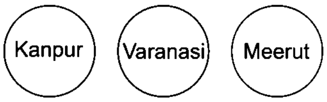
2. The given Venn diagram shows that there is no relation between three classes and no elements are common.



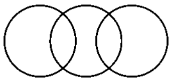
Ex **5** Which one of the following diagrams best depicts the relationship between Kanpur, Varanasi and Meerut?



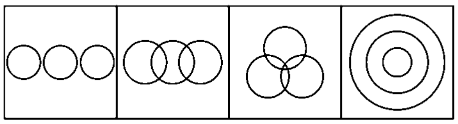
Sol. (*a*) Kanpur, Varanasi and Meerut all are cities of Uttar Pradesh but they are entirely different from one another. This can be expressed by option (a).



3. The given Venn diagram shows that two classes partly belongs to the third and are themselves independent of each other.

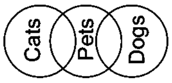


***Ex* 6** Which of the following diagrams best depicts the relationship between Dogs, Pets and Cats?

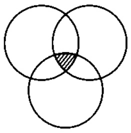


(a) (b) (c) (d)

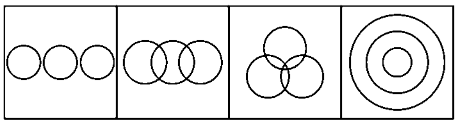
Sol. (*b*) Some dogs are pets and some cats are pets. But all pets are not dogs or cats. Also, dogs and cats are completely different groups and are not related to each other. This can be expressed as given in option (b).



4. The given Venn diagram shows that three separate classes are partly related to one another and the shaded portion is common to all the three classes.

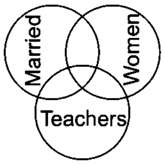


***Ex* 7** Which of the following diagrams best depicts the relationship between Married, Women and Teachers?

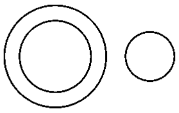


(a) (b) (c) (d)

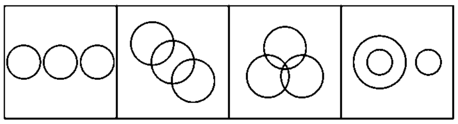
Sol. (*c*) Some women are teachers. Some women are married. Some teachers are married. Some married women are teachers. This can be expressed as given in option (c).



5. If one class belongs to the second class while the third class is entirely different from the two, then the diagram will be as follows

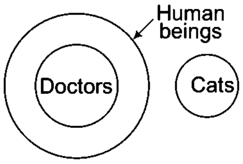


***Ex* 8** Which of the following diagrams best depicts the relationship between Doctors, Human beings and Cats?

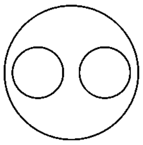


(a) (b) (c) (d)

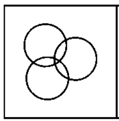
Sol. (*d*) All doctors come under the group of human beings but all human beings do not come under the group of doctors and cats are entirely different from doctors and human beings. The relation can be expressed by the diagram as given in option (d).

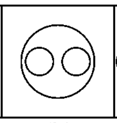


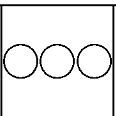
6. The given Venn diagram shows that two separate classes belong to the class of third.

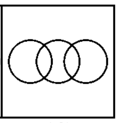


***Ex* 9** Which of the following diagrams best depicts the relationship between Table, Chair, Furniture?

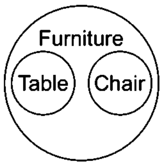

(a)


(b)

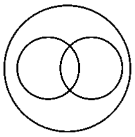

(c)


(d)

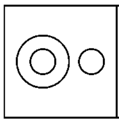
Sol. (*b*) No table can be chair and also no chair can be table. But both table and chair come under the group of furniture. This can be expressed as given in option (b).

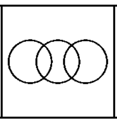


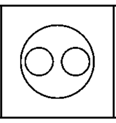
7. When two classes or groups belong to the class of third such that some items of each of these two groups are common, then the diagram will be as follows

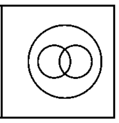


***Ex* 10** Which of the following diagram best depicts the relationship between Females, Mothers and Sisters?

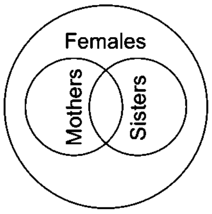

(a)


(b)

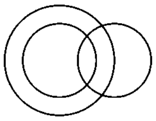

(c)


(d)

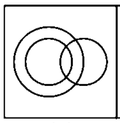
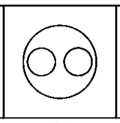
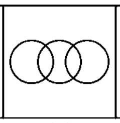
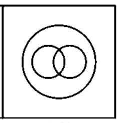
Sol. (*d*) Some mothers are sisters and some sisters are mother. Also, both mothers and sisters are females. This relationship can be expressed as given in option (d).



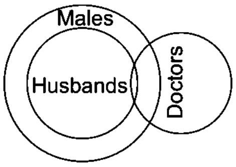
8. When one class belongs to the class of second and the third class is partly related to these two, then the diagram will be as follows



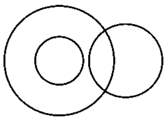
Ex **11** Which of the following diagrams best depicts the relationship between Males, Husbands and Doctors?


(a)

(b)

(c)

(d)

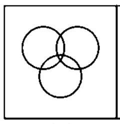
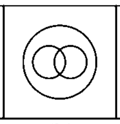
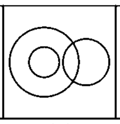
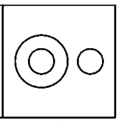
Sol. (*a*) All husbands are males. Also, some husbands and some males can be doctors. This relationship can be expressed as given in option (a).



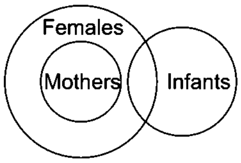
9. When one class belongs to the class of second and the third class is partly related to the second class, then the diagram will be as follows



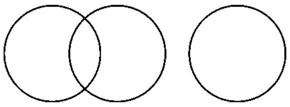
Ex **12** Which of the following diagram best depicts the relationship between Females, Mothers and Infants?


(a)

(b)

(c)

(d)

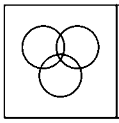
Sol. (c) All mothers and females. Also, some infants are females but infants can not be mothers. This can be expressed as given in option (c).

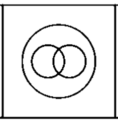


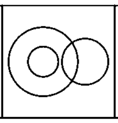
10. When two classes are partly related to each other and the third class is entirely different from these two, then the diagram will be as follows

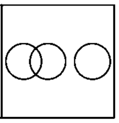


***Ex* 13** Which of the following diagrams best depicts the relationship between Professor, Author and Infants?

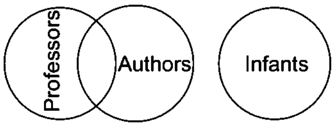

(a)


(b)


(c)


(d)

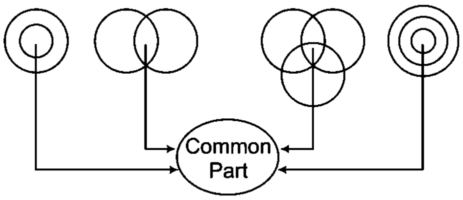
Sol. (*d*) Some professors can be authors and some authors can be professors but the class of infants is entirely different from these two. This relationship can be expressed as given in option (d).



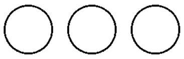
K Memory *Add-ons*

Association or Independency of Groups/Classes

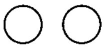
Two or more groups/classes are associated to one another when they have some common items/part as shown below

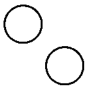


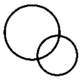
Two or more groups/classes are independent of one another when they have no common part/items at all. In this case, all the figures are separate from one another as shown below.

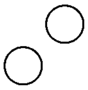


***Ex* 14** If L and M are two independent groups, then which of the following does not represent them?

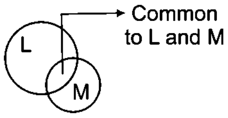

(a)


(b)


(c)

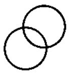

(d)

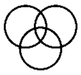
Sol. (c) Option (c) has some part common to both the circles. It means both the groups represented by the two circles have certain relationship between them and hence cannot be independent from each other.

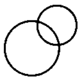


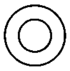
The following examples will give you a better idea about the type of questions asked in various competitive exams

***Ex* 15** Which of the following represents a correct relationship between India and Uttar Pradesh?

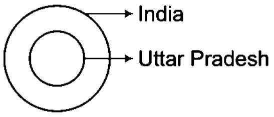

(a)


(b)

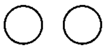

(c)

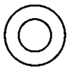

(d)

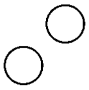
Sol. (*d*) Uttar Pradesh is a state of India. It means Uttar Pradesh exists completely inside India.

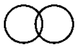


Ex **16** Which of the following diagrams represents a relationship between Animal and Cow?

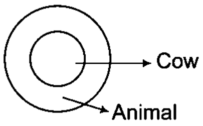

(a)


(b)

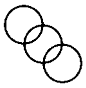

(c)

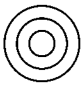

(d)

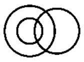
Sol. (*b*) Cow is an animal . This relationship can be represented by option (b).

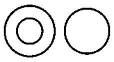


Ex **17** Which of the following diagrams represents a relationship among India, Rajasthan and Jaipur?

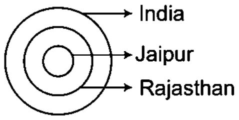

(a)


(b)

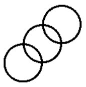

(c)

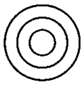

(d)

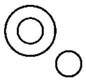
Sol. (*b*) Rajasthan is a state (part) of India and Jaipur is a city (part) of Rajasthan. Hence, Jaipur is a city (part) of India.

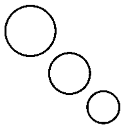


Ex **18** Which of the following diagrams represents the relationship among Apple, Banana and Mango?

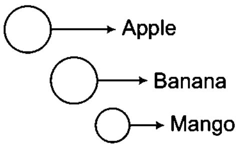

(a)


(b)

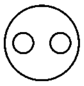

(c)

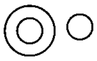

(d)

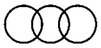
Sol. (*d*) Apple, banana and mango all are fruits but they are entirely different from one another.

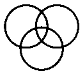


Ex **19** Which of the following diagrams represents the relationship among Bihar, Gaya and Darbhanga?

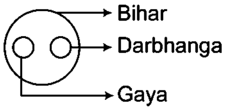

(a)


(b)

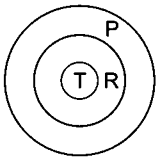

(c)


(d)

Sol. (*a*) Gaya and Darbhanga are two different towns of Bihar and hence option (a) aptly depicts the relationship among the three.



Ex **20** Which of the following is correct about the given diagram?



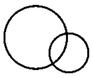
(a) All R are T (b) All P are T (c) All T are P (d) All P are R

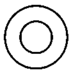
Sol. (c) T is present completely inside R and R is present completely inside P. Hence, T is present completely inside P (*i.e.*, all T are P).

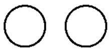
Practice Corner **10.1**

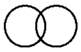
Build your Confidence...

1. Which of the following diagrams represents pens and pencils?

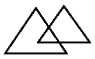

(a)

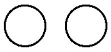

(b)

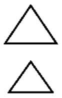

(c)

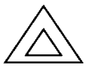

(d)

2. Which of the following diagrams represents a relationship between players and footballers? **[UP B.Ed.2012]**

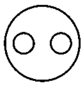

(a)

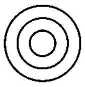

(b)

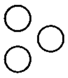

(c)

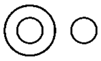

(d)

Directions (Q. Nos. 3-7) Each of the questions given below contains three groups of items. You are required to choose one of the four numbered diagrams (a), (b), (c) and (d) that depicts the correct relationship among the three groups of items in each of the question.


(a)


(b)


(c)


(d)

3. Moon, Earth, Universe

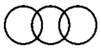
4. India, Pakistan, Asia

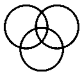
5. Batsman, Cricketer, Stick

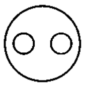
6. Book, Pen, Pencil

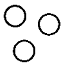
7. House, Bedroom, Bathroom. **[RRB (TC/CC) 2006]**

Directions (Q. Nos. 8-10) Which of the following diagrams best represents the relationship among given words.


(a)


(b)


(c)


(d)

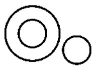
8. Woman, Teacher, Student **[RRB (Group 'D') 2009]**

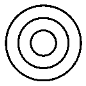
9. Elephant, Wolf, Animal **[UP B.Ed. 2008]**

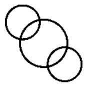
10. Red, Green, Colour **[UP B.Ed. 2012]**

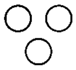
Directions (Q. Nos. 11-20) Each of the questions given below contains three items. These items may or may not have some relation with one another. Each group of the items may fit into one of the diagrams (a), (b), (c), (d) and (e). You have to indicate that the group of items in each of these questions correctly fits into which of the diagram.

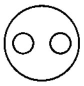
[SBI (PO) 2012]


(a)


(b)


(c)


(d)


(e)

11. Universe, Earth, Europe

12. Picture, TV, Radio

13. Living beings, Animals, Men

14. Radio, TV, Cinema hall

15. Residence, Resident, Road

16. Copy, Stationery, Car

17. Coal mines, Factory, Field

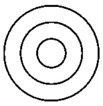
18. Clothes, Sari, Dhoti

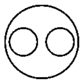
19. Chapter, Book, Topic

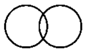
20. Boys, Class, Girls

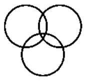
21. Identify the diagram that best represents the relationship among the classes given below **[SSC (10+2) 2013]**

Tea, Coffee, Drink


(a)

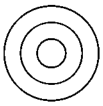

(b)

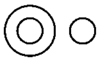

(c)

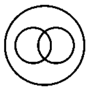

(d)

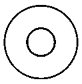
22. Which of the following diagrams best represents a relationship among Criminal, Thief and Pick pocket?

[UP B.Ed. 2009]


(a)

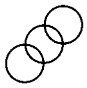

(b)

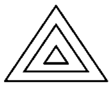

(c)

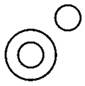

(d)

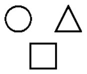
23. Which of the following diagrams best represents the relationship among Uttar Pradesh, Kanpur, Jaipur?

[UP B.Ed. 2011]


(a)

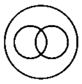

(b)

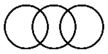

(c)

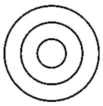

(d)

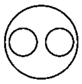
24. Identify the diagram that best represents the relationship among classes given below. **[SSC (Multitasking) 2014]**

Sportsmen, Cricketers, Batsman

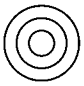

(a)

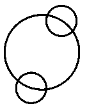

(b)

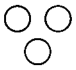

(c)

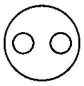

(d)

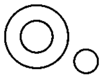
Directions (Q. Nos. 25-33) Each of the questions given below contains three groups of items. You have to choose from the following five numbered diagrams (a), (b), (c), (d) and (e), the diagram that depicts the correct relationship among the three groups of items in each of the question.


(a)


(b)


(c)


(d)


(e)

25. Pop, Songs, Classical

26. Maize, Sugarcane, Crops

27. Birds, Owls, Elephants

28. Asia, Delhi, India

29. Lawyers, Women, Doctors

30. Brinjal, Glass, Spoon

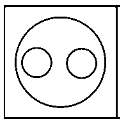
31. Pen, Stationery, Powder

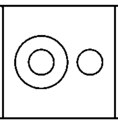
32. Vehicle, Car, Jeep

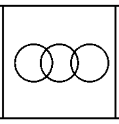
33. Year, Month, Day

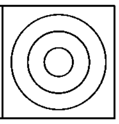
34. Identify the diagram that best represents the relationship among the classes given below. **[SSC (10+2) 2013]**

Liquids, Milk, River, Water

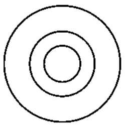

(a)

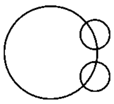

(b)

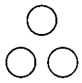

(c)

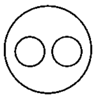

(d)

35. Which one of the following diagrams best represents the relationship between Snake, Lizard and Reptiles? **[SSC (CPO) 2011]**

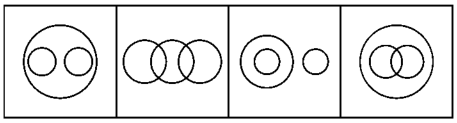

(a)


(b)

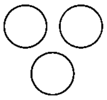

(c)

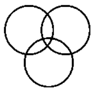

(d)

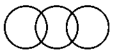
36. Which of the following diagrams represents the correct relationship between Herbivorous, Tigers and Animals? **[SSC (CGL) April 2013]**

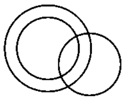

(a) (b) (c) (d)

37. Choose the correct relationship depicting diagram for Smokers, Lawyers, Non-smokers. **[SSC (10+2) 2012]**

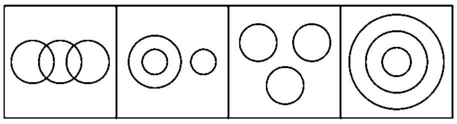

(a)


(b)

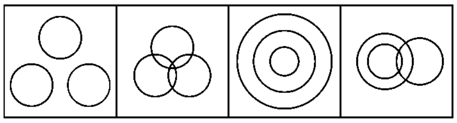

(c)


(d)

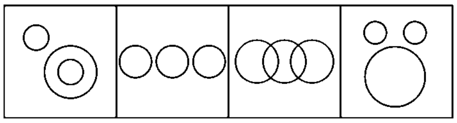
38. Which one of the following diagrams best depicts the relationship among Earth, Sea and Sun? **[SSC (CGL) 2013**


(a) (b) (c) (d)

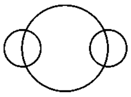
39. Which one of the following diagrams represents the correct relationship among Teachers, Educated, Employed? **[SSC (Steno) 2013]**

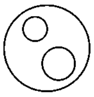

(a) (b) (c) (d)

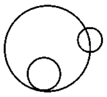
40. Identify the diagram that best represents the relationship among the classes given below. Police, Thief, Criminal **[SSC (Multitasking) 2014, SSC (Steno) 2013]**

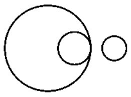

(a) (b) (c) (d)

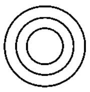
41. Which of the following diagrams represents the relation between Currency, Rupee and Dollar? **[UCO Bank (Clerk) 2011]**


(a)

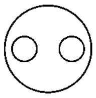

(b)

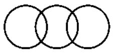

(c)

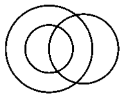

(d)

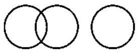

(e)

42. Which one of the following diagrams best depicts the relationship among Elephants, Wolves and Animals? **[SSC (Steno) 2012]**

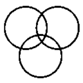

(a)

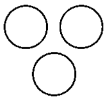

(b)

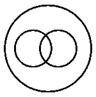

(c)

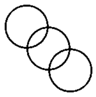

(d)

43. Which diagram correctly represents the relationship between Politicians, Poets and Women? **[SSC (CGL) 2011]**


(a)

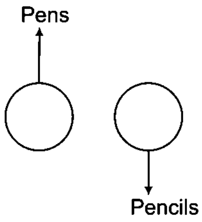

(b)


(c)

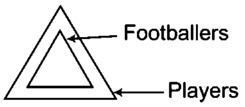

(d)

Response & Interpretations **(10.1)**

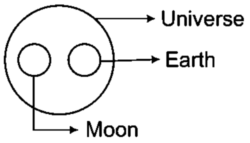
1. (c) Pen and pencil both are used for writing but they are entirely different. This can be expressed as given in option (c).



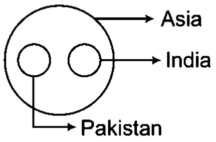
2. (d) All footballers are players. It means the class of footballers exists completely inside the class of players. This can be expressed as given in option (d).



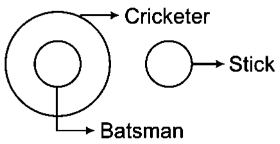
3. (*a*) Moon is satellite, while earth is a planet. Hence, both are entirely different but both of them are a part of the universe. This relation can be expressed as given in option (a).


Universe
Earth
Moon

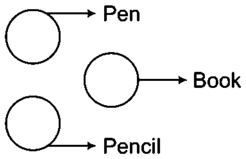
4. (*a*) India and Pakistan are two different countries but they both are a part of Asia. This relation can be expressed as given in option (a).


Asia
India
Pakistan

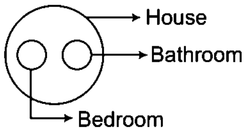
5. (*d*) All batsmen are cricketers but stick is entirely different. This can be expressed as given in option (d).


Cricketer
Stick
Batsman

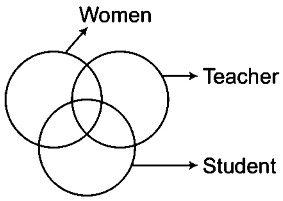
6. (*c*) Book, pen and pencil, all the three belong to stationery items but they are entirely independent of one another. This can be expressed as given in option (c).


Pen
Book
Pencil

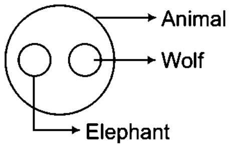
7. (*a*) Both bedroom and bathroom are entirely different but both are parts of a house and exist completely inside it (house). This can be expressed as given in option (a).


House
Bathroom
Bedroom

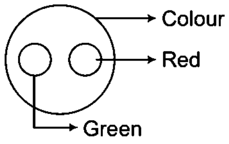
8. (*b*) Some women are teachers. Some women are students. Some teachers are students. Some women teachers are students. This can be expressed as given in option (b).


Women
Teacher
Student

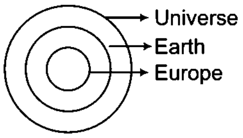
9. (*c*) Elephant and wolf both belong to the group of animals but they both are entirely different. This can be expressed as given in option (c).


Animal
Wolf
Elephant

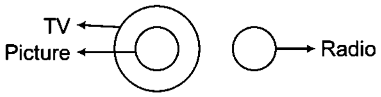
10. (*c*) Red and green both belong to the group of colours but they both are entirely different. This can be expressed as given in option (c).


Colour
Red
Green

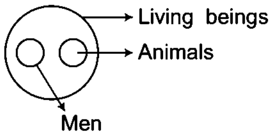
11. (*b*) Universe contains Earth and Earth contains Europe. This relation can be expressed as given in option (b).


Universe
Earth
Europe

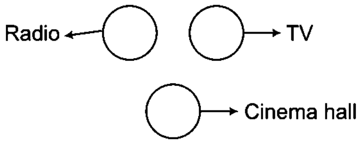
12. (*a*) Picture is there in TV while radio is not related to both of them. This can be expressed as given in option (a).


TV
Picture
Radio

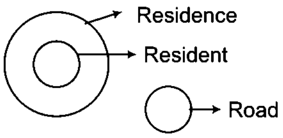
13. (*e*) Men and animals are entirely different but they both are living beings. This can be expressed as given in option (e).


Living beings
Animals
Men

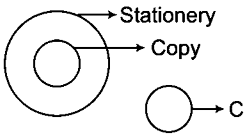
14. (*d*) Radio, TV and cinema hall are entirely different from one another. This can be expressed as given in option (d).


Radio
TV
Cinema hall

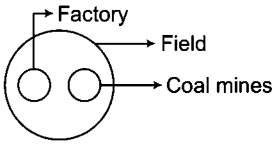
15. (*a*) Resident lives in the residence while road is entirely different from resident and residence. This can be expressed as given in option (a).


Residence
Resident
Road

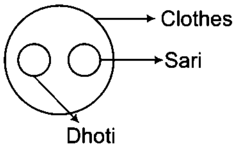
16. (*a*) Copy completely belongs to the group of stationery while car is entirely different. This can be expressed as given in option (a).


Stationery
Copy
Car

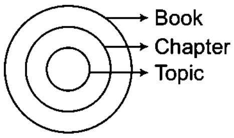
17. (*e*) Both coal mines and factory are located in the field. This can be expressed as given in option (e).


Factory
Field
Coal mines

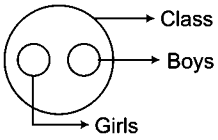
18. (*e*) Dhoti and sari are entirely different but both belong to the group of clothes. This can be expressed as given in option (e).


Clothes
Sari
Dhoti

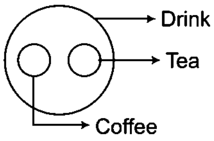
19. (*b*) A book has chapters and a chapter has topics. This can be expressed as given in option (b).


Book
Chapter
Topic

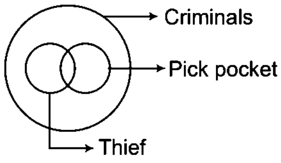
20. (*e*) A class has both boys and girls but boys and girls are entirely different from each other. This can be expressed as given in option (e).


Class
Boys
Girls

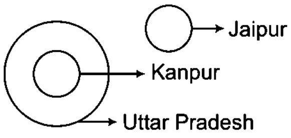
21. (*b*) Tea and coffee are different type of drink.


Drink
Tea
Coffee

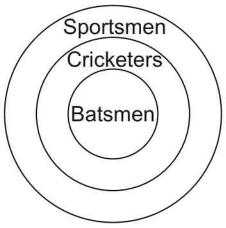
22. (*c*) Some thieves are pick pockets and they both come under the category of criminals. This can be expressed as given in option (c).


Criminals
Pick pocket
Thief

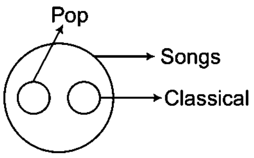
23. (*c*) Kanpur is a city in the state of Uttar Pradesh while Jaipur is entirely different as it is a city in Rajasthan. This can be expressed as given in option (c).


Jaipur
Kanpur
Uttar Pradesh

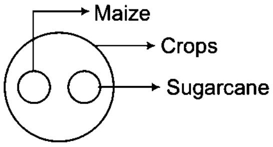
24. (*c*) A batsman is a cricketer and cricketers are sportsmen.


Sportsmen
Cricketers
Batsmen

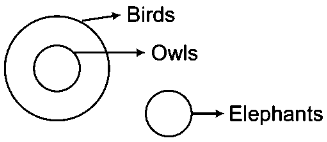
25. (*d*) Both classical and pop are types of songs but both types are entirely different. This can be expressed as given in option (d).


Pop
Songs
Classical

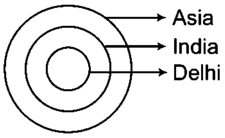
26. (*d*) Maize and sugarcane are entirely different but both completely belong to the group of crops. This can be expressed as given in option (d).


Maize
Crops
Sugarcane

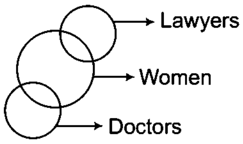
27. (*e*) Owl completely belongs to the group of birds while elephant is entirely different from both. This can be expressed as given in option (e).


Birds
Owls
Elephants

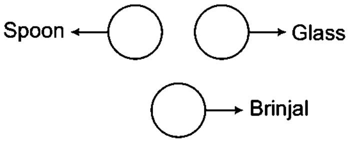
28. (*a*) India is completely inside Asia while Delhi is completely inside India. This can be expressed as given in option (a).


Asia
India
Delhi

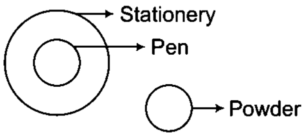
29. (*b*) Some of the lawyers and doctors may be women. This can be expressed as given in option (b).


Lawyers
Women
Doctors

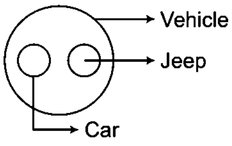
30. (*c*) Spoon, glass and brinjal are entirely different from one another. This can be expressed as given in option (c).


Spoon
Glass
Brinjal

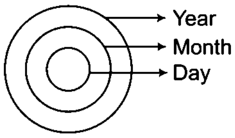
31. (*e*) All pens belong to the group of stationery but powder is entirely different from both of them. This can be expressed as given in option (e).


Stationery
Pen
Powder

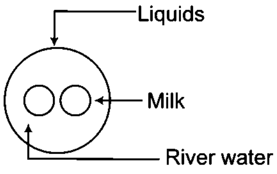
32. (*d*) Car and jeep are entirely different but they both completely belong to the group of vehicles. This can be expressed as given in option (d).


Vehicle
Jeep
Car

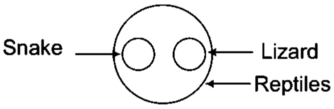
33. (*a*) Year contains month and month contains days. This can be expressed as given in option (a).


Year
Month
Day

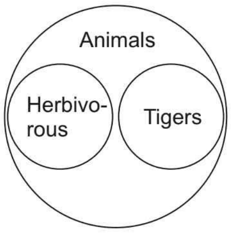
34. (*a*) 'Milk' and 'River water' both are liquids. This can be expressed as given in option (a).


Liquids
Milk
River water

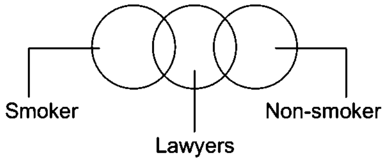
35. (*d*) Snake and lizard are entirely different but both belong to the class of reptiles. This can be expressed as given in option (d).


Snake
Lizard
Reptiles

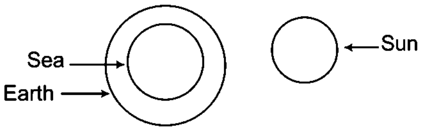
36. (*a*) Tigers are animals but not herbivorous. This can be expressed as given in option (a).


Animals
Herbivo-rous
Tigers

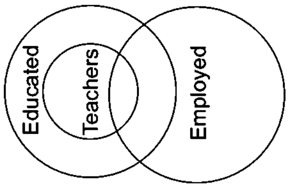
37. (*c*) Some lawyers may be smokers while some lawyers may be non-smokers. But all the smokers and non-smokers may not be lawyers. This can be expressed as given in option (c).


Smoker
Non-smoker
Lawyers

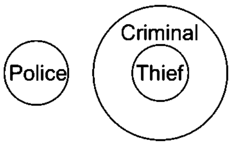
38. (*b*) Sea is a part of the Earth but Sun is present outside the Earth. This relation can be expressed as given in option (b).


Sea
Earth
Sun

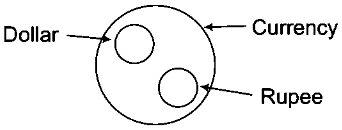
39. (*d*) All the teachers are educated but some are employed. This can be expressed as given in option (d).


Educated
Teachers
Employed

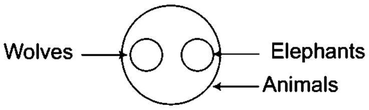
40. (*a*) Thief is a criminal but police is different. This can be expressed as given in option (a).


Criminal
Police
Thief

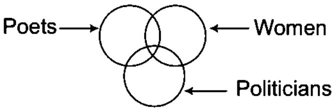
41. (*b*) Rupee and dollar are entirely different from each other but both come under the category of currency. This can be expressed as given in option (b).


Dollar
Currency
Rupee

42. (*a*) Wolves and elephants both are animals but are different from each other.This can be expressed as given in option (a).


Wolves
Elephants
Animals

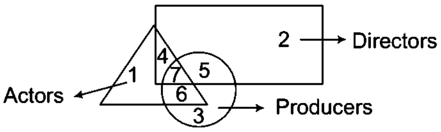
43. (*a*) Some women are poets. Some women are politicians. Some women politicians are poets. This can be expressed as given in option (a).


Poets
Women
Politicians

Type 2 Analysis Based Venn Diagram

In this type of questions, generally a Venn diagram comprising of different geometrical figures is given. Each geometrical figure in the diagram represents a certain class. The candidate is required to study and analyse the figure carefully and then answer the given questions based on it.

Let's take an example



This diagram consists of three groups—Actors, Directors and Producers, represented by a triangle, a rectangle and a circle, respectively.

There are seven regions represented by numbers from 1 to 7 where each region represents the following

Region 1 Represents only Actors.

Region 2 Represents only Directors.

Region 3 Represents only Producers.

Region 4 Represents those Actors who are also Directors but not Producers.

Region 5 Represents those Directors who are also Producers but not Actors.

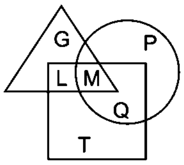
Region 6 Represents those Producers who are also Actors but not Directors

Region 7 Represents those Actors who are Directors as well as Producers.

In some other questions, the candidate is required to find out the correct shaded Venn diagram which correctly depicts the situation given in the question.

Some solved examples given below will give you a better idea about both the types of questions asked

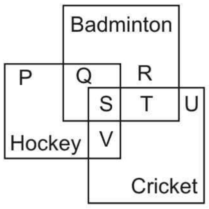
***Ex* 21** In the given diagram, square represents doctors, triangle represents lady and circle represents surgeon. Which of the following letters represents those ladies who are doctors and surgeon both?



(a) M (b) G (c) Q (d) P

Sol. (*a*) It is clear from the diagram that M is common in all the three figures *i.e.*, square, triangle and circle. It means that required letter is M.

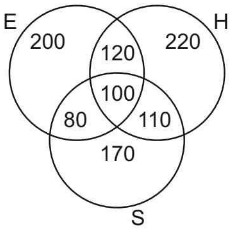
Ex 22 The given diagram represents those people who play hockey, cricket and badminton. See the diagram and find out those people who play all the three games.



(a) T + U (b) Q + R (c) P + Q + R (d) S

Sol. (*d*) S is that part which is common to all the three squares. It means that S represents those people who play all the three games.

***Ex* 23** A result of a survey of 1000 persons with respect to their knowledge of Hindi (H), English (E) and Sanskrit (S) is given below



What is the ratio of those who know all the three languages to those who do not know Sanskrit?

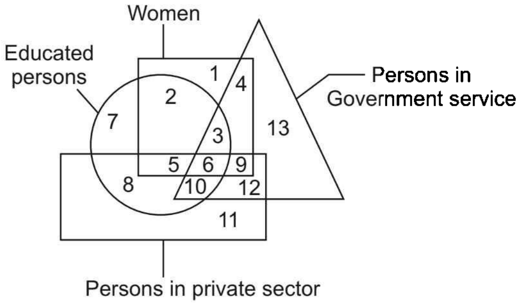
(a) $\frac{5}{27}$ (b) $\frac{10}{17}$ (c) $\frac{1}{10}$ (d) $\frac{1}{9}$

Sol. (*a*) The persons knowing all the three languages are represented by the region which is common to all the three circles. Hence, number of such persons = 100. The persons who do not know Sanskrit are represented by the region outside circle S. So, number of such persons = (200 + 120 + 220) = 540,

$\therefore$ Required ratio = $\frac{100}{540} = \frac{5}{27}$

Directions (Example Nos. 24-27) Read the following information carefully and answer the questions based on them.

In the Venn diagram given below, the square represents women, the triangle represents persons who are in Government services, the circle represents educated persons and the rectangle represents persons working in private sector. Each section of the diagram is numbered. Your task is to study the diagram and answer the questions that follow.



***Ex* 24** Which number represents educated women, who are in Government jobs?

(a) 2 (b) 3 (c) 6 (d) 4

Sol. (*b*) Educated women in Government jobs are represented by number 3 as it occupies the space common to circle, square and triangle.

***Ex* 25** Which number represents the uneducated women, who have Government jobs as well as jobs in private sectors?

(a) 6 (b) 4 (c) 12 (d) 9

Sol. (*d*) Number 9 represents uneducated women who have Government jobs as well as jobs in private sectors because it lies in the space which is common to square, triangle and rectangle.

***Ex* 26** Number 10 represents

(a) educated women in private jobs
(b) uneducated men in Government jobs
(c) educated men working in private sectors
(d) educated men having private as well as Government jobs

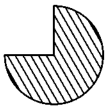
Sol. (*d*) Number 10 represents educated men having private jobs as well as Government jobs because it lies in the space which is common to circle, triangle and rectangle .

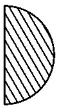
***Ex* 27** Number 2 represents

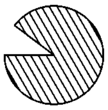
(a) educated women who neither have Government jobs nor have a private job
(b) uneducated women with no jobs
(c) educated men with Government jobs
(d) uneducated men with Government jobs

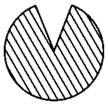
Sol. (*a*) Number 2 represents educated women who neither have Government job nor have private job because it lies in the space which is common to square and circle.

***Ex* 28** If 15 out of 30 people are drinkers, which figure will depict drinker group?


(a)


(b)


(c)


(d)

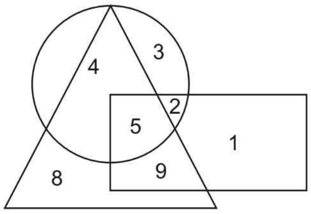
Sol. (*b*) Ratio of drinkers = 15 out of 30 $= \frac{15}{30} = \frac{1}{2}$ nd part of the whole

This condition is best depicted by the figure given in option (b).

Practice Corner **10.2**

Build your Confidence...

Directions (Q. Nos. 1-3) Study the following diagram to answer these questions.

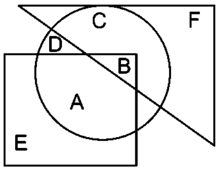


1. Find out the number that lies only inside the triangle.
(a) 4 (b) 3 (c) 8 (d) 1

2. What are the numbers that lie inside any two figures?
(a) 5, 1 (b) 4, 3, 1 (c) 8, 3 (d) 4, 9, 2

3. Find out the number that lies inside all the figures.
(a) 5 (b) 8 (c) 9 (d) 2

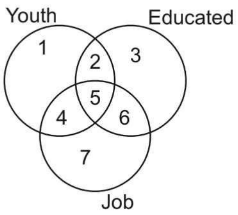
4. See the following diagram carefully to answer the question that follows



Which of the following statements is correct according to the diagram given above? **[SSC (LDC) 2008]**

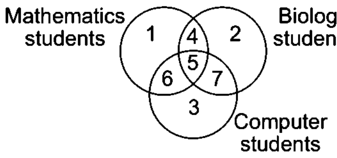
(a) A and B lie in all the three figures
(b) E, A, B and C lie in all the three figures
(c) F, C, D, B and A lie in all the three figures
(d) Only B lies in all the three figures

5. See the given diagram and then find out the youth who does job but not educated. **[SSC (CGL) 2010]**



(a) 5 (b) 4
(c) 6 (d) 7

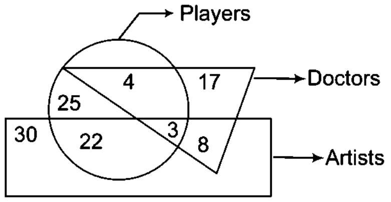
6. Identify the region that represents students who study Biology and computer but not Mathematics. **[SSC (CGL) April 2014]**



(a) 6
(b) 2
(c) 7
(d) 4

Directions (Q. Nos. 7-11) Each of the following questions is based on the diagram given below. Study the diagram carefully and answer the questions.

[LIC (ADO) 2010]


Players
4
17
Doctors
25
30
22
3
8
Artists

In the above diagram, rectangle represents 'artists', circle represents 'players' and triangle represents 'doctors'.

7. How many players are neither artists nor doctors?

(a) 25 (b) 22 (c) 4 (d) 29
(e) None of these

8. How many artists are players?

(a) 22 (b) 3 (c) 25 (d) 8
(e) None of these

9. How many artists are neither doctors nor players?

(a) 22 (b) 8 (c) 25 (d) 30
(e) None of these

10. How many doctors are neither players nor artists?

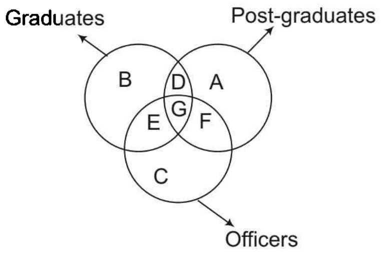
(a) 4 (b) 25 (c) 8 (d) 17
(e) None of these

11. How many doctors are players and artists both?

(a) 4 (b) 7 (c) 3 (d) 8
(e) None of these

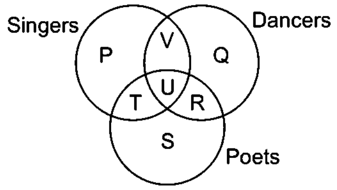
12. Given below are three figures which represent Graduates, Post-graduates, Officers. Which part represents all the Officers who are graduates and post-graduates?

[SSC (Multitasking) 2013]


Graduates
Post-graduates
B
D
A
G
E
F
C
Officers

(a) G (b) D
(c) B (d) C

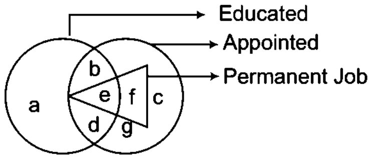
13. The diagram represents the students who are singers, dancers and poets **[SSC (CPO) 2006]**


Singers
Dancers
P
V
Q
T
U
R
S
Poets

Study the above diagram and identify the region which represents the students who are both poets and singers but not dancers

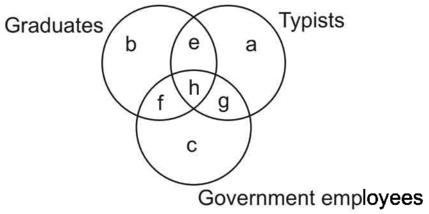
(a) P + T + S (b) T
(c) T + U + R + S (d) P + T + U + S

14. In the following diagram, identify the region that represents appointed educated persons whose job is not permanent. **[UP B.Ed. 2010]**


Educated
Appointed
Permanent Job
a
b
e
f
c
d
g

(a) b and g (b) a and d (c) a and c (d) b and d

Directions (Q. Nos. 15-16) Below is given a figure made of three circles intersecting one another. These circles represents graduates, typists and Government employees. The intersecting regions have been denoted by a, b, c, e, f, g and h, respectively. Study the diagram carefully and answer the questions that follow. **[RRB (TC/CC) 2009]**


Graduates
Typists
b
e
a
h
f
g
c
Government employees

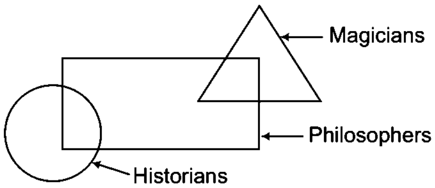
15. Which of the following letters represents the typists who are only graduates?

(a) e (b) h (c) g (d) a

16. Which of the following letters represents the typists who are Government employees but not graduates?

(a) e (b) g (c) f (d) h

Directions (Q. Nos. 17-19) Read the following information and then answer the questions that follow. In the figure the rectangle stands for philosophers, circle for historians and triangle for magicians.



17. According to the above diagram, which one of the following statements is true? **[CMAT 2013]**

(a) All philosophers are magicians but no magician is a historian
(b) All magicians are either historians or philosophers
(c) Some philosophers are historians and some magicians are philosophers
(d) Some historians, who are philosophers, are magicians too

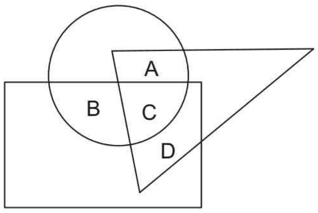
18. According to the above diagram, which one of the following statements is true?

(a) All historians are magicians
(b) Some magicians are philosophers as well as historians
(c) All historians are either philosophers or magicians
(d) Some historians are philosophers

19. According to the above diagram, which one of the following statements is not true?

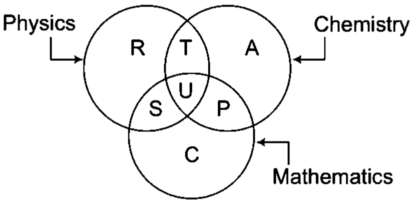
(a) Some magicians are philosophers
(b) No magician is historian
(c) Magicians, who are philosophers are historians also
(d) Some philosophers are magicians

20. In the following diagram, the triangle represents doctors, the circle represents players and the rectangle represents singers. Which region represents doctors who are singers but not players? **[SSC (Steno) 2011]**



(a) A
(b) B
(c) C
(d) D

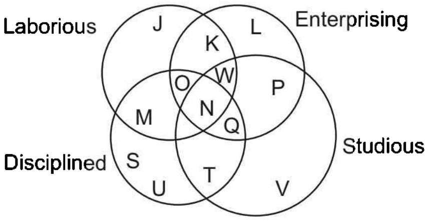
21. The diagram below represents the students who study Physics, Chemistry and Mathematics.



Study the diagram and identify the region which represents students who study both Physics and Chemistry but not Mathematics. **[SSC (FCI) 2012]**

(a) T + S + U + P (b) C
(c) R + T + A + U + P + S (d) T

Directions (Q. Nos. 22-26) Below is given a figure with four intersecting circles, each representing a group of persons having the quality written against it. Study the figure carefully and answer the questions that follow.



22. People who are not laborious, enterprising and disciplined are represented by

(a) Q (b) T (c) U (d) V
(e) None of these

23. The region which represents people who are not studious, but possess other three qualities, is denoted by

(a) M (b) N (c) O (d) W
(e) None of these

24. The region which represents the people who are enterprising, studious and disciplined but not laborious, is denoted by

(a) Q (b) P (c) S (d) T
(e) None of these

25. People who are not studious and disciplined but are laborious and enterprising both, are represented by

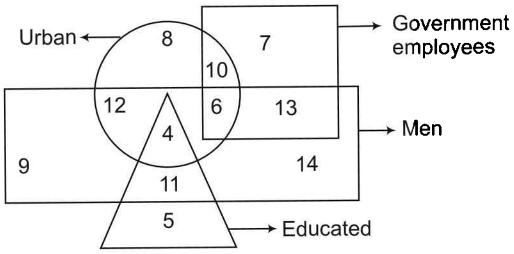
(a) M (b) N (c) P (d) K
(e) None of these

26. The people possessing all the qualities are represented by

(a) O (b) N
(c) K (d) Q
(e) None of these

Direction (Q. Nos. 27-28) Consider the following Venn diagram and answer the questions that follow.

[NIFT (UG) 2012]


Urban
8
7
Government employees
10
12
6
13
Men
4
9
14
11
5
Educated

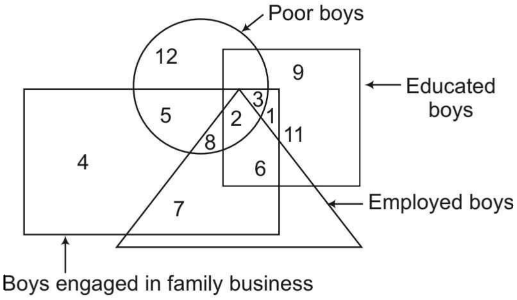
27. In the following diagram, which of the following represents the educated men but not urban?

(a) 9 (b) 5
(c) 4 (d) 11

28. In the following diagram, which of the following represents a man who is urban as well as a Government employee?

(a) 7 (b) 13 (c) 10 (d) 6

Directions (Q. Nos. 29-31) Read the following information carefully. In the given diagram, the circle represents poor boys, the square represents educated boys, the triangle represents the boys who are employed somewhere and the rectangle represents those who help in the family business. Each section of the diagram is numbered. Now, answer the questions given below on the basis of the diagram.


Poor boys
12
9
Educated boys
5
3
2
1
8
11
4
6
7
Employed boys
Boys engaged in family business

29. Which number represents those poor boys who help in family business but are not educated or employed elsewhere?

(a) 2 (b) 3 (c) 4 (d) 5

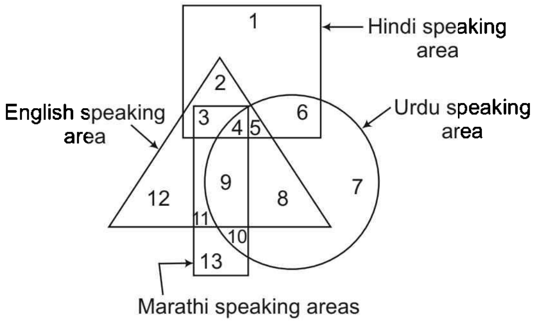
30. Which number represents the group of educated poor boys who are employed somewhere but do not help in family business?

(a) 12 (b) 3
(c) 11 (d) None of these

31. Which section does number 3 represent?

(a) Uneducated poor boys who do not help in family business
(b) Educated poor boys employed in service
(c) Uneducated boys who help in family business
(d) Educated poor boys who help in family business

Directions (Q. Nos. 32-34) Figure given below depicts an area where people speak four different languages. The triangle depicts English speaking area, the square depicts Hindi speaking area, the circle stands for Urdu speaking area and the rectangle is for area where people speak Marathi. Each part is numbered. You task is to study the figure and answer the questions that follow


1
Hindi speaking area
2
English speaking area
3
4
5
6
Urdu speaking area
9
12
8
7
11
10
13
Marathi speaking areas

32. Which number depicts the area where the three languages English, Marathi and Urdu are spoken but Hindi is not spoken?

(a) 4 (b) 11 (c) 9 (d) 8

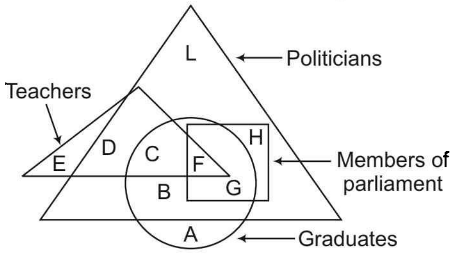
33. Number 2 depicts

(a) English and Hindi speaking area
(b) Only English speaking area
(c) Hindi and Marathi speaking area
(d) English and Marathi speaking area

34. Which number depicts Marathi, English and Hindi speaking area not the Urdu speaking area?

(a) 4 (b) 5 (c) 9 (d) 3

Directions (Q. Nos. 35-38) In the following figure, the smaller triangle represents the teachers, the big triangle represents the politicians, the circle represents the graduates and the square represents the members of parliament. Different regions are being represented by letters of English alphabet.


L
Politicians
Teachers
D
C
H
E
F
Members of parliament
B
G
A
Graduates

35. Who among the following are graduates or teachers but not politicians?

(a) B, G (b) G, H
(c) A, E (d) E, F

36. Who among the following politicians are graduates but not the members of parliament?

(a) B, C (b) L, B
(c) D, L (d) A, H, L

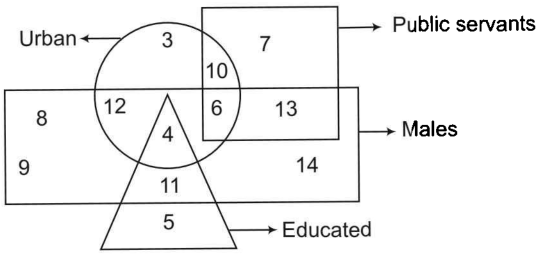
37. Who among the following politicians are neither teachers nor graduates?

(a) E, F (b) D, E
(c) C, D (d) L, H

38. Who among the following members of parliament is a graduate as well as a teacher?

(a) G (b) F
(c) C (d) H

Directions (Q. Nos. 39-41) Following questions are based on the given diagram. Study the diagram carefully to answer the questions. In the diagram, rectangle represents males, triangles represents educated, square represents public servants and circle represents urban.



39. Out of the following options, how many educated males are not urban?

(a) 10 (b) 4
(c) 11 (d) 9

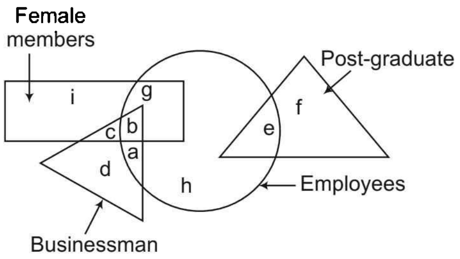
40. Out of the following options, how many persons are urban who are neither public servants nor educated or males?

(a) 3 (b) 5 (c) 6 (d) 10

41. Out of the following options, how many persons are related to educated males and urban region?

(a) 4 (b) 2 (c) 5 (d) 11

Directions (Q. Nos. 42-46) Each of the questions below is based on the information given below. Four different sections have been projected with the help of four different figures. Rectangle represents female members, circle represents employees, triangle represents businessman and big triangle represents post graduates. Based on this information, answer the questions given below.



42. Which of the following group of employees represents those employees, who are not businessmen?

(a) e, g, h (b) a, g, h (c) b, g, e (d) a, e, g, h

43. Which of the following group represents the section, comprising persons who are either employees or businessmen but not female members?

(a) a, b, d (b) a, e, h (c) a, g, h (d) a, d, e, h

44. Who among the following are female members as well as businessmen?

(a) a, h (b) b, g (c) b, c (d) b, h

45. Who among the following are businessmen but are neither post graduates nor employees?

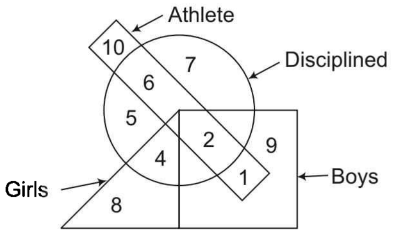
(a) b, d, g (b) a, d, h (c) c, d (d) b, e

46. Who among the following are the female members but neither businessmen nor employees?

(a) i, g (b) b, c, i, g (c) b, i, e (d) i

47. In the following figure, the boys who are athletes and disciplined are indicated by which number?

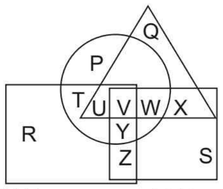
[SSC (LDC) 2005]



(a) 4 (b) 2 (c) 6 (d) 5

48. In the given figure, circle represents persons having car, triangle represents persons having motorcycle, square represents persons having autorickshaw, rectangle represents persons having cycle. Find the region, which represents persons having car, motorcycle, cycle but no autorickshaw.

[SSC (CGL) 2013]



(a) X (b) U (c) V (d) W

Response & Interpretations **(10.2)**

1. (*c*) According to the diagram, number 8 lies only inside the triangle.

2. (*d*) Number common to circle and triangle = 4
Number common to rectangle and triangle = 9
Number common to circle and rectangle = 2

3. (*a*) According to the diagram,
Common number that lies inside all figures = 5

4. (*d*) Statement given in option (d) is correct because only B is common in all three figures.

5. (*b*) The region 4 is common to youth and job but not educated.

6. (*c*) The region which represents students who study Biology and computer but not Mathematics is '7'.

7. (*a*) There are 25 players who are neither artists nor doctors because this is the only region of the circle which is not common with either rectangle or triangle.

8. (*c*) Required number = 22 + 3 = 25

9. (*d*) There are 30 artists who are neither doctors nor players because this is the only region of the rectangle which is not common with either circle or triangle.

10. (*d*) There are 17 doctors who are neither players nor artists because this is the only region of the triangle which is not common with either circle or rectangle.

11. (*c*) The region 3 is common to triangle, circle and rectangle and hence, represents doctors who are players as well as artists.

12. (*a*) The part of figure representing officers, who are graduates and post-graduates is common to all three circles *i.e.*, G.

13. (*b*) Region T is common to the both singers and poets but not dancers.

14. (*d*) According to the diagram, regions b and d represent appointed educated persons whose job is not permanent.

15. (*a*) Letter e represents the typists who are only graduates but not Government employees.

16. (*b*) Letter g represents the typists who are only Government employees but not graduates.

17. (*c*) Statement (c) is true because some portion of rectangle is common to both the triangle and the circle.

18. (*d*) The circle and the rectangle have some area in common which indicates that some historians are philosophers.

19. (*c*) Because no portion of the figure shows the common space among the three figures.

20. (*d*) Letter D represents those people who are doctors and singers but not players as it is common to triangle and rectangle but not circle.

21. (*d*) Region 'T' represents the students who study both Physics and Chemistry but not Mathematics.

22. (*d*) People who are only studious are represented by V.

23. (*c*) O shows the persons who are laborious, enterprising and disciplined.

24. (*a*) Q represents the region of enterprising, studious and disciplined people.

25. (*d*) Required region is represented by K.

26. (*b*) N shows the region common to all the four circles. *i.e.* the people possessing all the qualities is represented by N.

27. (*d*) Educated men who are not urban are represented by the region which is common to both the triangle and the rectangle but not to the square and circle. So, the required region is 11.

28. (*d*) A man who is urban as well as a Governments employee is common to the circle , square and rectangle but not to the triangle. So, the required region is 6.

29. (*d*) Number 5 represents those poor boys who help in family business but are not educated or employed elsewhere because it occupies the space common to circle and rectangle only.

30. (*d*) No number occupies the space which is common only to the figures— circle, square and triangle.

31. (*d*) Number 3 is present in the space common to circle, square and rectangle, hence represents educated poor boys who help in family business.

32. (*c*) Number '9' depicts the area where the three languages English, Marathi and Urdu are spoken. Hence, option (c) is the correct answer.

33. (*a*) Number 2 lies in the space which is common to triangle and square and hence represents English and Hindi speaking area.

34. (*d*) Number 3 lies in the space, which is common to triangle, square and rectangle but not to the circle and hence represents the required area.

35. (*c*) A and E are graduates or teachers but not politicians because A and E do not fall under the big triangular space.

36. (*a*) B and C are graduate politicians but not the members of parliament because B and C do not fall under the square.

37. (*d*) L and H are the politicians who are neither teachers nor graduates because L and H do not fall under small triangular space and circular space.

38. (*b*) F is the member of parliament who is a graduate as well as a teacher because F is common to circle, square and the small triangle.

39. (*c*) Only 11 persons are educated males but not urban.

40. (*a*) Only 3 persons are urban, who are neither public servents nor educated or males.

41. (*a*) Only 4 educated males are there who belong to urban region.

42. (*a*) The group of employees e, g and h represents those employees who are not businessmen.

43. (*d*) The group of employees a, d, e and h represents persons who are either employees or businessmen but not female members.

44. (*c*) Letters b and c represents female members as well as businessmen.

45. (*c*) Letters c and d are businessmen but are neither post graduates nor employees.

46. (*d*) Only i represents the female members who are neither businessman nor employees.

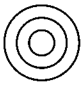
47. (*b*) The required region is the one which is common to the rectangle, circle and square but lies outside the triangle, *i.e.,* 2.

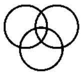
48. (*b*) Letter U represent persons having car, motorcycle, cycle but no autorickshaw.

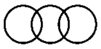
Master Exercise

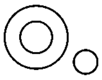
Take a Leap...

1. Which of the following diagrams represents Wild Animals, Lions, Cow?

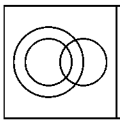

(a)

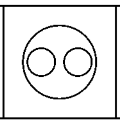

(b)

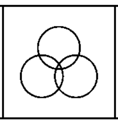

(c)

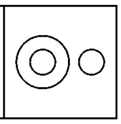

(d)

2. Which of the following diagrams represents India, Lucknow, USA? **[NIFT (UG) 2013]**


(a)

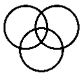

(b)

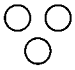

(c)

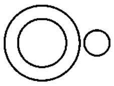

(d)

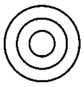
Directions (Q. Nos. 3-6)

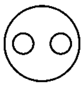
Each question given below contains three groups of items. You have to choose from the following five numbered diagrams, the diagram that depicts the correct relationship among the three groups of items in each of the question.


(a)


(b)


(c)


(d)


(e)

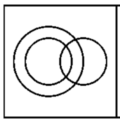
3. Vegetable, Fruit, Brinjal

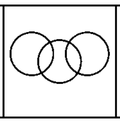
4. Door, Window, House

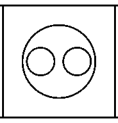
5. Honest, Intelligent, Poor

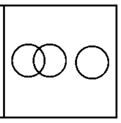
6. Car, Train, Automobile

7. Which of the following diagrams correctly represents the relationship amongst Tiger, Elephant, Animal? **[SSC (CPO) 2013]**

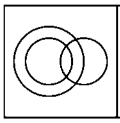

(a)

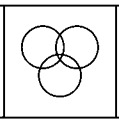

(b)

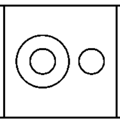

(c)

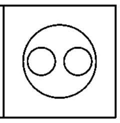

(d)

8. Which diagram will best represent the relationship amongst the three classes Doctor, Teacher, Women? **[SSC (CPO) 2013]**


(a)

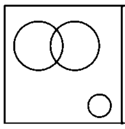

(b)

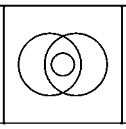

(c)

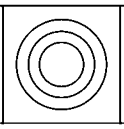

(d)

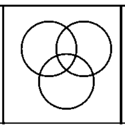
Directions (Q. Nos. 9-13)

Each of the questions given below has three items having certain relationship among them. The same relationship is expressed by sets of circles, each circle representing one item irrespective of its size. Match the items with right set of circles.


1


2


3


4

None of these
5

9. Rivers, Canals, Perennial source of water
(a) 1 (b) 2 (c) 3 (d) 5

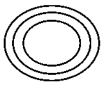
10. Rings, Ornaments, Diamond rings
(a) 3 (b) 2 (c) 1 (d) 4

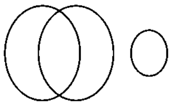
11. Women, Married persons, Wives who work
(a) 1 (b) 3 (c) 4 (d) 2

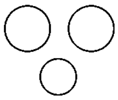
12. Computer skilled, Graduates, Employed
(a) 1 (b) 4 (c) 2 (d) 5

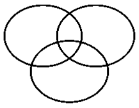
13. Students, First divisioners, Third divisioners
(a) 2 (b) 3 (c) 4 (d) 5

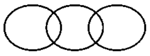
14. Which of the following diagrams represents Granite, Tree and Water? **[CG PSC 2013]**

(a)


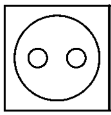
(b)


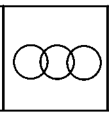
(c)


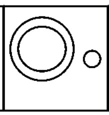
(d)


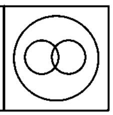
(e)


15. Which of the following diagrams represents the correct relationship between Books, Novels and Dictionaries?

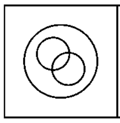

(a)

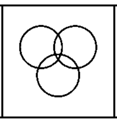

(b)

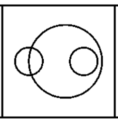

(c)

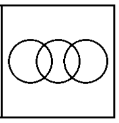

(d)

16. Which of the following combinations of circles best represents Athletes, Sprinters and Marathon runners?
[NIFT (PG) 2013]

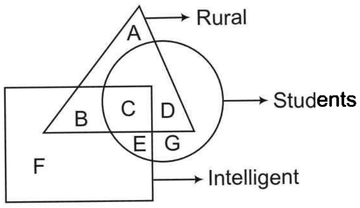

(a)


(b)


(c)

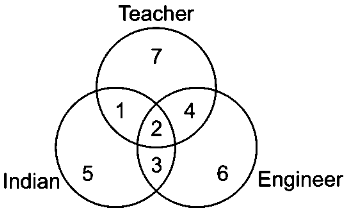

(d)

17. Find the region that represents those rural students who are not intelligent? **[UP B.Ed. 2010]**



(a) D (b) A (c) B (d) G

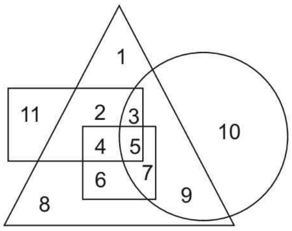
18. In the following diagram, there are three circles intersecting one another. Each intersecting region represents a class of people. Each intersecting region has been denoted by a digit. Study the diagram carefully and answer the given question.
[SSC (Multitasking) 2008]



Find out those Engineers who are neither Indian nor Teacher.

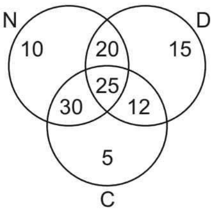
(a) 2 (b) 3 (c) 6 (d) 4

19. In the given diagram, circle represents professionals, square represents dancers, triangle represents musicians and rectangle represents Europeans. Different regions in the diagram are numbered 1 to 11. Who among the following is neither a dancer nor musician but is professional and not a European?
[SSC (CGL) 2013]



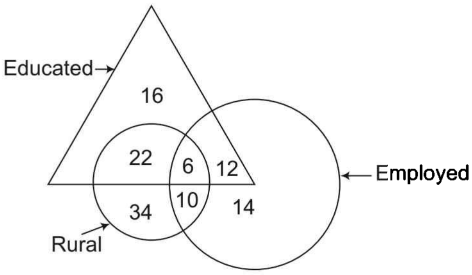
(a) 8 (b) 11 (c) 1 (d) 10

20. In the diagram given below, N represents non-degree holders, D represents degree holders and C represents the computer programmers. Among these, which number indicates the programmers, who are neither degree holders nor non-degree holders?



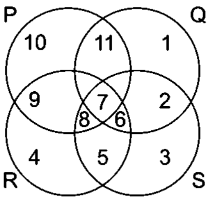
(a) 30 (b) 5 (c) 25 (d) 12

21. How many educated people are employed?
[SSC (10+2) 2012]



(a) 18 (b) 26 (c) 24 (d) 16

22.



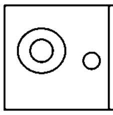
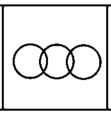
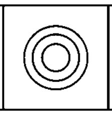
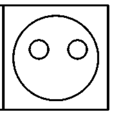
In the above diagram, circle P represents hardworking people, circle Q represents intelligent people, circle R represents truthful people and circle S represents honest people. Which region represents the people who are intelligent, honest and truthful but not hardworking? **[UPSC (CSAT) 2012]**

(a) 6 (b) 7
(c) 8 (d) 11

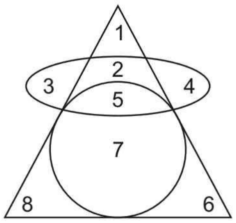
23. Identify the diagram that best represents the relationship among classes given below.

[SSC (10+2) 2013]

Mammal, Dog, Bat


(a)

(b)

(c)

(d)

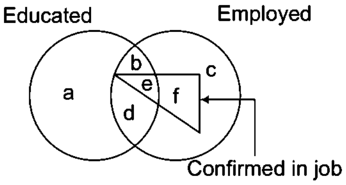
24. Which number is common to all the geometrical figures in the diagram below?



(a) 7 (b) 5 (c) 2 (d) 4

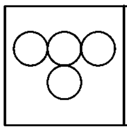
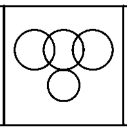
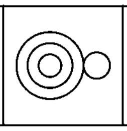
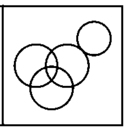
25. Read the following diagram and find the region representing persons who are educated and employed but not confirmed.

[SSC (CGL) 2013]



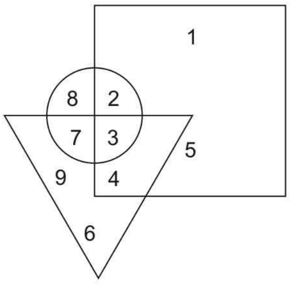
(a) ac (b) abc (c) bd (d) adc

26. In a class of 46 students, 18 played football, 17 played cricket including 6 who played football. 16 students played hockey including 4 who played cricket but not football. Five students played carrom but no out door games. Which of the following diagrams represents these facts?


(a)

(b)

(c)

(d)

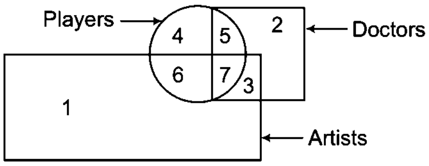
27. In the following diagram, square represents the area where jackfruit trees are grown, circle represents mango trees and triangle represents coconut trees. Which numbers represent the area where all types of trees are grown?

[SSC (CPO) 2012]



(a) 4 (b) 3 (c) 5 (d) 8

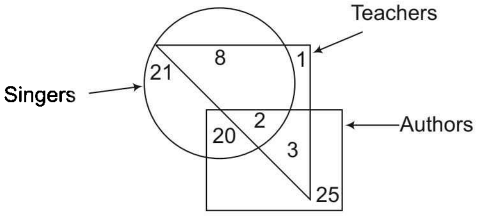
28. Which numbered space in the diagram below represents doctors who are players as well as artists?



(a) 2 (b) 3 (c) 6 (d) 7

29. Study the following diagram and answer the question given below.

[SSC (CPO) 2013]

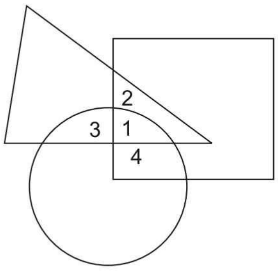


How many teachers are neither authors nor singers?

(a) 1 (b) 8 (c) 2 (d) 3

30. In the given diagram, circle represents strong men, square represents short men and triangle represents military officers. Which region represents military officers who are short but not strong?

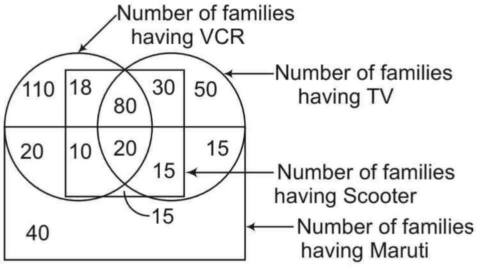
[SSC (Multitasking) 2013]



(a) 2 (b) 3
(c) 4 (d) 1

Master Exercise

Directions (Q. Nos. 31-35) Study the diagram given below and answer the questions that follow.


Number of families having VCR
Number of families having TV
Number of families having Scooter
Number of families having Maruti
110
18
80
30
50
20
10
20
15
15
15
40

31. Find out the number of families which have all the four things mentioned in the diagram above.
(a) 40 (b) 30
(c) 35 (d) 20

32. Find out the number of families which have scooters.
(a) 145 (b) 100
(c) 188 (d) 240

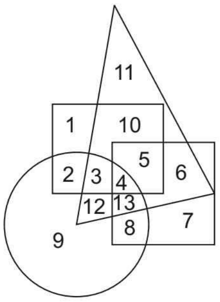
33. Find out the number of families which have VCR and TV both.
(a) 84 (b) 24
(c) 104 (d) None of these

34. Find out the number of families which have only one thing, *i.e.*, either VCR or TV or scooter or maruti.
(a) 160 (b) 184
(c) 200 (d) 254

35. Find out the number of families which have TV and scooter both but have neither VCR nor maruti.
(a) 15 (b) 30 (c) 4 (d) 50

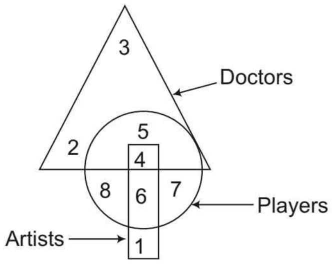
36. In the following diagram, Police Officer represents Circle, Corrupt represents Triangle, Poet represents Square and Married represents Rectangle.

[SSC (Multitasking) 2013]


11
1
10
5
6
2
3
4
12
13
8
7
9

The area representing unmarried Police Officers who are not Corrupt but are Poets is
(a) 8 (b) 9
(c) 2 (d) 4

Directions (Q. Nos. 37-41) In the following questions, answers are based on the diagram given below, where the triangle represents doctors, the circle represents players and the rectangle represents the artists.


3
Doctors
5
2
4
8
6
7
Players
Artists
1

37. Which numbered space in the diagram represents doctors, who are also players and artists?
(a) 2 (b) 3 (c) 4 (d) 5

38. Which numbered space in diagram represents artists, who are players?
(a) 6 (b) 7 (c) 8 (d) 4

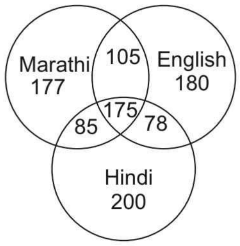
39. Which numbered space in the diagram represents artists, who are neither players nor doctors?
(a) 1 (b) 2 (c) 3 (d) 4

40. Which numbered space in the diagram represents players, who are neither artists nor doctors?
(a) 1, 2 (b) 3, 4 (c) 6, 7 (d) 7, 8

41. Which numbered space in the diagram represents doctors, who are players but not artists?
(a) 2 (b) 3
(c) 4 (d) 5

Directions (Q. Nos. 42-43) Study the following diagram carefully and answer the questions based on it.

[SSC (CGL) 2013]


Marathi 177
105
English 180
175
85
78
Hindi 200

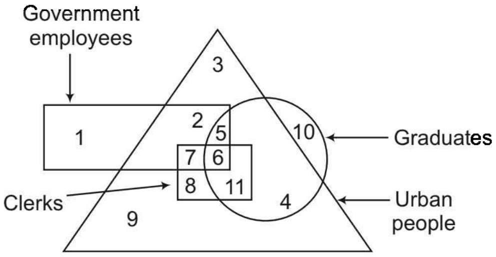
42. The diagram shows the survey on a sample of 1000 persons with reference to their knowledge of English, Hindi and Marathi. How many persons know all the languages?
(a) 78 (b) 175
(c) 105 (d) 85

Master *Exercise*

43. The diagram shows the survey on a sample of 1000 persons with reference to their knowledge of English, Hindi and Marathi. 105 people know ... languages.

(a) Marathi, Hindi (b) English, Hindi
(c) Marthi, English (d) Hindi, Marathi, English

Directions (Q. Nos. 44-47) In the following questions, answers are based on the diagram given below



I. The rectangle represents Government employees
II. The triangle represents urban people
III. The circle represents graduates
IV. The square represents clerks

44. Which of the following statements is true?

(a) All Government employees are clerks
(b) Some Government employees are graduates as well as clerks
(c) All Government employees are graduates
(d) All clerks are Governments employees but not graduates

45. Choose the correct statement

(a) some clerks are Government employees
(b) no clerk is from urban areas
(c) all graduates are from urban areas
(d) all graduates are Government employees

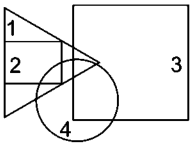
46. Which of the following numbers represents urban Government employees, who are graduate but not clerk?

(a) 9 (b) 4 (c) 10 (d) 5

47. Which number represents clerks, who are Government employees but are neither graduates nor live in urban areas?

(a) 4 (b) 2
(c) 9 (d) None of these

Directions (Q. Nos. 48-49) In the following diagram represents a group of persons. The triangle represents educated persons, the rectangle represents the administrative persons, the square represents the businessman and the circle represents income tax payers. [CG PSC 2013]



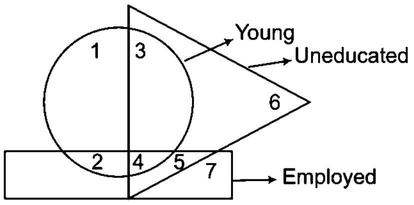
48. From the above figure, it can be concluded that

(a) all businessmen pay income tax
(b) some administrative persons are income tax payers
(c) all income tax payers are educated
(d) educated persons which are not in administrative service do not pay income tax
(e) all businessmen are educated

49. According to the given figure, it can be inferred that

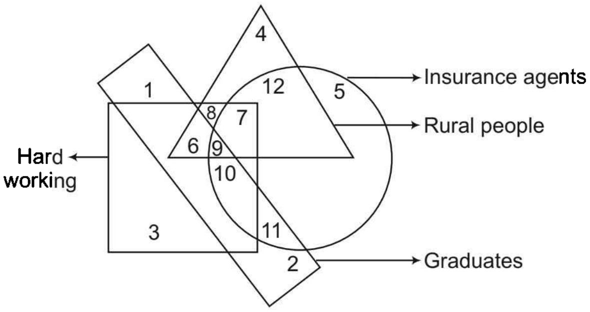
(a) none of the income tax payer is educated
(b) all the administrative persons are income tax payers
(c) none of the income tax payer is administrative person
(d) some of the persons who are neither businessman nor income tax payers are educated persons
(e) None of the above

50. In the diagram given below, the circle represents young persons, the triangle represents uneducated persons and the rectangle represents employed persons. Which number represents young, uneducated and unemployed persons?



(a) 6 (b) 3 (c) 2 (d) 5

Directions (Q. Nos. 51-55) In the following diagram, the circle stands for insurance agents, the square stands for hard working, the triangle stands for rural people and the rectangle stands for graduates. Study the diagram carefully and answer the questions that follow. [LIC (ADO) 2008]



51. Non-rural and hard working insurance agents who are graduates are indicated by the region

(a) 5 (b) 7 (c) 9 (d) 10
(e) None of these

52. Insurance agents who are neither graduates nor hard working but rural are represented by the region

(a) 8 (b) 10 (c) 11 (d) 12
(e) None of these

53. Hard working, non-graduates, rural agents are represented by the region

(a) 6 (b) 7
(c) 9 (d) 12
(e) None of these

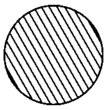
54. Non-graduates insurance agents who are not hard working and who do not belong to rural areas are represented by the region

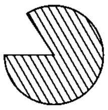
(a) 5 (b) 6
(c) 8 (d) 11
(e) None of these

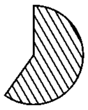
55. Insurance agents who are graduates, hard working and rural are represented by the region

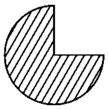
(a) 6 (b) 8
(c) 9 (d) 10
(e) None of these

56. If 24 out of 32 people are Hindus, then which of the following figures best depicts/represents the 'Hindus'?

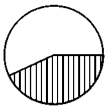

(a)

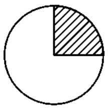

(b)

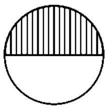

(c)

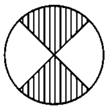

(d)

57. If 9% people in Mehiyan village are post-graduates and 16% people are graduates, then which of the following diagram (shaded portion) best depicts/represents the graduate population of the Mehiyan village?

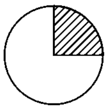

(a)

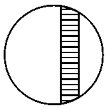

(b)

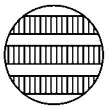

(c)

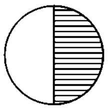

(d)

58. If the expenditure on advertisement of a company is decreased by 20% and out of the rest another 37.5% decreases, then which of the following diagrams best depicts/represents the situation?

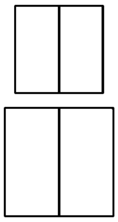

(a)

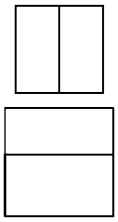

(b)

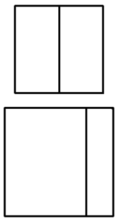

(c)

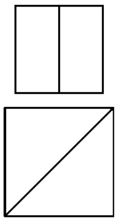

(d)

59. Out of a group of 50 students, 20 study Hindi and rest Economics. Another group of 40 students have 50% with Hindi subjects and rest with History. Which diagram depicts the situation most appropriately?

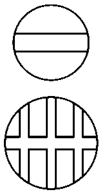

(a)

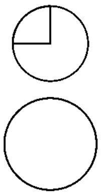

(b)

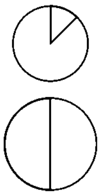

(c)

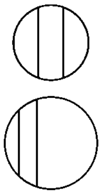

(d)

60. In a college of 150 students and 30 teachers, there are 20% students and as many teachers who play cricket. If the shaded portion represents the cricketers, then which of the diagrams will most suitably depict the situation?


(a)

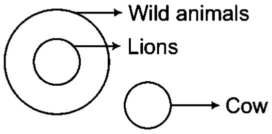

(b)


(c)

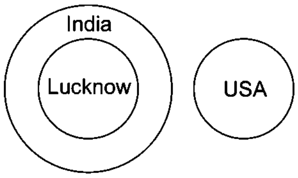

(d)

Response & Interpretations (Master Exercise)

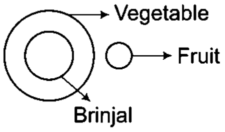
1. (*d*) All lions are wild animals but cow is entirely different. This can be expressed as given in option (d).


Wild animals
Lions
Cow

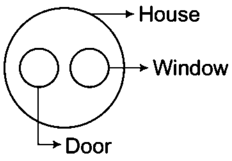
2. (*d*) Lucknow is a city of India while USA is entirely a different country. This can be expressed as given in option (d).


India
Lucknow
USA

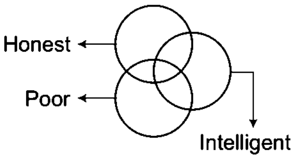
3. (*c*) Brinjal is a vegetable while fruit is entirely different. This can be expressed as given in option (c).


Vegetable
Fruit
Brinjal

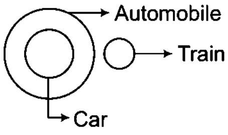
4. (*e*) Door and window are entirely different but both are the parts of house. This can be expressed as given in option (e).


House
Window
Door

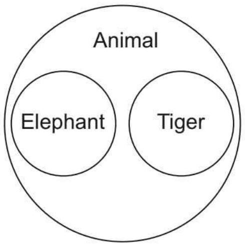
5. (*a*) Some honest people may be intelligent. Some honest people may be poor. Some intelligent people may be poor. Some poor honest people may be intelligent. This can be expressed as given in option (a).


Honest
Poor
Intelligent

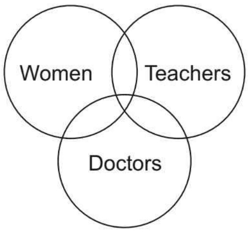
6. (*c*) All cars are automobile but train is entirely different from both of them. This can be expressed as given in option (c).


Automobile
Train
Car

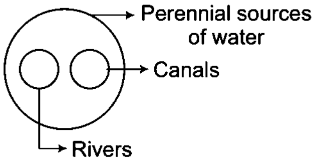
7. (*c*) We know that both tiger and elephant are animals. This relationship can be expressed as given as in option (c).


Animal
Elephant
Tiger

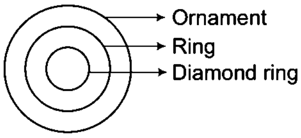
8. (*b*) Some women are teachers. Some women are doctors. Some doctors are teachers. Some women doctors are also teachers. This can be expressed as given in option (b).


Women
Teachers
Doctors

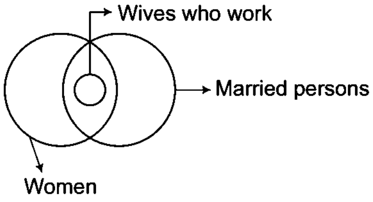
9. (*d*) Rivers and canals both are perennial sources of water and hence, both are included in it. This can be expressed by the following diagram.


Perennial sources of water
Canals
Rivers

10. (*a*) Ring is a type of ornament and diamond ring is a variety of ring. This can be expressed as given in option (a).

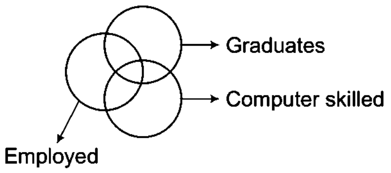

Ornament
Ring
Diamond ring

11. (*d*) This can be expressed as given in option (d)

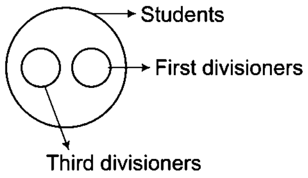

Wives who work
Married persons
Women

Here, small circle represents wives who work because wives who work are a part of married persons as well as women.

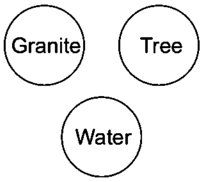
12. (*b*) Some graduates may be computer skilled, some graduates may be employed. Some computer skilled may be employed. Some computer skilled graduates may be employed. This can be expressed as given in option (b).



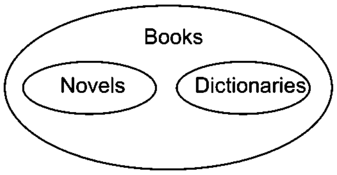
13. (*d*) First divisioners and third divisioners both are students and hence are completely included in the class of students. This can be expressed as given below.



14. (*c*) Granite, Tree and Water are three different things and are not related to one another in any manner. This can be expressed as given in option (c).

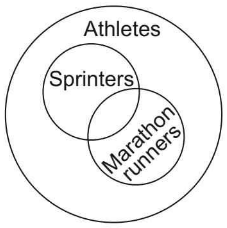


15. (*a*)



Novels and Dictionaries are different types of Books.

16. (*a*) All sprinters and marathon runners are athletes and also some sprinter can be marathon runners. So, this relation can be expressed as given in option (a).



17. (*a*) Region D represents rural students who are not intelligent.

18. (*c*) Digit 6 represents those engineers who are neither Indian nor teacher.

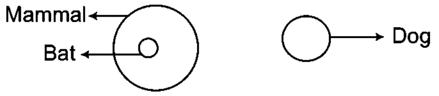
19. (*d*) The person who is neither a dancer nor a musician but is professional and not a European is represented by that region of circle which is not common with any other figure. It means that the required number is '10'.

20. (*b*) Only number 5 represents the programmers, who are neither degree holders nor non-degree holders.

21. (*a*) Number of educated and employed people = 12 + 6 = 18

22. (*a*) We want a region which represents the people who are intelligent, honest and truthful but not hardworking. So, region 6 represents such people.

23. (*a*)

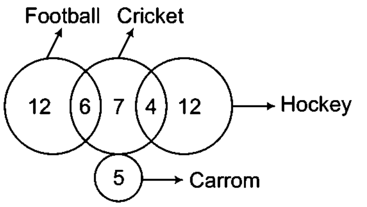


Bats are mammal but dog is different.

24. (*b*) Number 5 is common to all the three geometrical figures.

25. (*c*) In the given figure, the persons who are educated and employed but not confirmed are represented by the region common to both the circles but outside the triangle. So, the required region is 'bd'.

26. (*b*) Only figure given in option (b) represents the given facts. This can be illustrated by the help of following diagram



27. (*b*) All types of trees are grown in the area which is represented by the number 3.

28. (*d*) Since, number 7 is present on that portion of the figure, which is common to square, circle and rectangle, hence it represents doctors who are players as well as artists.

29. (*a*) The teachers who are neither authors nor singers are represented by that region of triangle which is not common with any other figure. So, the required region is '1'.

30. (*a*) Region 2 represents military officers who are short but not strong as this region is common to the triangle and square but not circle.

31. (*d*) Number 20 is common to all the four figures and hence, it can be concluded that 20 families have all the four things.

32. (*c*) Number of families having scooters are represented by the square and total of all the numbers present in square is given by 18+80+30+10+20+15+15 = 188

33. (*d*) 100 families have both VCR and TV as it is the sum of the numbers present on the portion common to both the circles *i.e.*, 80 and 20.

34. (*c*) Sum of 110, 50 and 40 will represent such families as all these numbers lie on the portion not common to other figures. Hence, the required number of families = 110+50+40 = 200.

35. (*b*) Number 30 lies on the portion common to the figures representing families having TV and scooter both but neither VCR nor maruti.

36. (*a*) Unmarried Police Officers who are not corrupt but are poets are represented by the region common to circle and square but not the other figures. So, the required area is 8.

37. (*c*) The region 4 is common to triangle, circle and rectangle and hence, represents doctors who are players as well as artists.

38. (*a*) The region 6 is common to circle and rectangle only and hence represents the artists who are players.

39. (*a*) The region 1 of rectangle is not common to any other figure and hence is the required answer.

40. (*d*) The region 7 and 8 of circle is not common to any other figure and hence is the required answer.

41. (*d*) The region 5 is common to circle and triangle only and hence represents the required portion

42. (*b*) Person knowing all the languages are represented by the region common to all the three circles *i.e.*, 175.

43. (*c*) 105 people know Marathi and English both.

44. (*b*) Statement (b) is correct as number 6 represent employees who are graduates as well as clerks.

45. (*a*) Statement (a) is correct as numbers 7 and 6 represent clerks, who are Government employees.

46. (*d*) Number 5 is common to rectangle, circle and triangle but not to square and hence, it represents urban Government employees who are graduates but not clerks.

47. (*d*) None of the number occupies the required space, which is common to rectangle and square only.

48. (*b*) From the figure, it is clear that some administrative persons are income tax payers as shown in the diagram.

49. (*d*) Some of the persons who are neither businessman nor income tax payers are educated persons as shown in the diagram.

50. (*b*) Number 3 represents young, uneducated and unemployed persons as it is common to the circle and triangle but not to the rectangle.

51. (*d*) Region 10 is common to the circle,rectangle and square and hence, represents the required region.

52. (*d*) Insurance agents who are neither graduates nor hard working but rural are represented by region 12 as it is common to circle and triangle.

53. (*b*) 7 is common region for hard working, non-graduates and rural agents.

54. (*a*) Region 5 represents non-graduates insurance agents who are not hard working and who do not belong to rural areas.

55. (*c*) Region 9 is common for all four figures and hence, represents the required region.

56. (*d*) Ratio of Hindus = 24 out of 32 = $\frac{24}{32} = \frac{3}{4}$ th part of whole.

57. (*b*) Graduate population of Mehiyan = 9% + 16%

$$= 25\% = \frac{25}{100} = \frac{1}{4}\text{th}$$

58. (*d*) Total percentage decrease in expenditure

$$= 20 + 37.5\% \text{ of } 80 = 20 + \frac{80}{100} \times 37.5$$

$$= 20 + 30 = 50\%$$

59. (*b*) In first group,

Number of Hindi students = 20

and number of Economics students = 50 − 20 = 30

In second group,

Number of Hindi students = $\frac{50}{100} \times 40 = 20$

and number of History students = 40 − 20 = 20

The situation is best represented by option (b).

60. (*c*) Number of students playing cricket

$$= \frac{20}{100} \times 150 = 30$$

and number of teachers playing cricket = Number of students playing cricket = 30

Hence, all the teachers play cricket.

So, the diagrams given in option (c) will most suitably depict the situation.

11

Blood Relations

Blood relation between two individuals is defined as a relation between them by the virtue of their birth rather than by their marriage or any other reasons.

Different types of questions covered in this chapter are as follows

- Blood Relation Based on Conversation
- Blood Relation Based on Puzzles
- Symbolically Coded Blood Relationship

Blood relation questions involve analysis of information showing the blood relationship among members of the family. In this, a chain of relationships is given in the form of information and on the basis of this information, relation between any two members of the chain is asked from the candidate. Candidates are supposed to be familiar with the knowledge of different relationships in the family.

Generally, the questions based on blood relation deal with the hierarchical structure of the family (*i.e.,* seven generations of the family) which is generally three generation above and three generation below the current generation.

Different relationships between the family members of different generations are given below

Generation	Male	Female
Three generations above ↑↑↑	Great grandfather	Great grandmother
	Maternal great grandfather	Maternal great grandmother
	Great grandfather-in-law	Great grandmother-in-law
Two generations above ↑↑	Grandfather	Grandmother
	Maternal grandfather	Maternal grandmother
	Grandfather- in- law	Grandmother-in-law
One generation above ↑	Father, Uncle,	Mother, Aunt
	Maternal uncle, Father-in-law	Maternal aunt, Mother-in- law
Current generation (self) →	Husband, Brother	Wife, Sister
	Cousin, Brother-in-law	Cousin, Sister-in-law
One generation below ↓	Son	Daughter
	Nephew	Niece
	Son-in-law	Daughter-in-law
Two generations below ↓↓	Grandson	Granddaughter
	Grandson-in-law	Granddaughter-in-law
Three generations below ↓↓↓	Great grandson	Great granddaughter
	Great grandson-in-law	Great granddaughter-in-law

Important Blood Relations

Father of grandfather or grandmother	Great grandfather
Mother of grandfather or grandmother	Great grandmother
Father of father or mother	Grandfather
Mother of father or mother	Grandmother
Wife of grandfather	Grandmother
Husband of grandmother	Grandfather
Father-in-law of father/mother	Grandfather
Mother-in-law of father/mother	Grandmother
Father's father/mother only son	Father
Only daughter-in-law of father's father/father's mother	Mother
Husband of mother	Father
Wife of father	Mother
Second wife of father	Step mother
Brother of father or mother	Uncle
Sister of father or mother	Aunt
Husband of aunt	Uncle
Wife of uncle	Aunt
Son of grandfather/grandmother	Father/Uncle
Daughter of father-in-law/ mother-in-law of father	Mother/Aunt
Father of wife/husband	Father-in-law
Mother of wife/husband	Mother-in-law
Children of same parents	Siblings
Father's /mother's only son/daughter	Oneself
Son of father or mother	Brother

Daughter of father or mother	Sister
Son of second wife of father	Step brother
Daughter of second wife of father	Step sister
Son/daughter of uncle/aunt	Cousin
Brother of husband or wife	Brother-in-law
Sister of husband or wife	Sister-in-law
Husband of sister/sister-in-law	Brother-in-law
Son of father	Oneself/Brother
Mother of son/daughter	Oneself / Wife
Father of daughter/son	Oneself/Husband
Son of son of grandmother /grandfather	Cousin/Oneself/ Brother
Daughter of son of grandmother/ grandfather	Cousin/Oneself/ Sister
Son of brother or sister	Nephew
Daughter of brother or sister	Niece
Grandson of father/mother	Son/Nephew
Granddaughter of father/mother	Daughter/Niece
Husband of daughter	Son-in-law
Wife of brother/brother-in-law	Sister-in-law
Wife of son	Daughter-in-law
Son of Son/ Daughter	Grandson
Daughter of Son/Daughter	Granddaughter
Son's/Daughter's grandson	Great grandson
Son's/ Daughter's granddaughter	Great granddaughter

Steps involved in Drawing a Family Diagram

Suppose G, P, R, S and T are the members of a family in which

I. P and S are married couple.
II. S is not a male.
III. T is the son of P while P is the son of G.
IV. R is the sister of T.

On the basis of given information, now we can draw a family diagram

Step I From Statement I, P and S are married couple and this can be represented as below

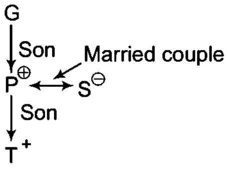
$$P \leftrightarrow S$$

Step II From Statement II, S is not a male means S is definitely a female. Now, as S and P are married couple, P is definitely a male. This can be represented as follows

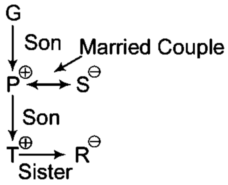
$$P^{\oplus} \leftrightarrow S^{S}$$

This step makes it clear that P is the husband and S is the wife.

Step III From Statement III, T is the son of P and P is the son of G. Now, the family diagram will be given as follows



Step IV From Statement IV, R is the sister of T. Now, combining all the steps, following family diagram can be drawn



The following conclusions can be drawn from this final diagram

I. S is the daughter-in-law of G.
II. T is the grandson of G.
III. R is the granddaughter of G.
IV. P is the father of R.
V. R is the daughter of P and S.
VI. T is the son of S.
VII. S is the mother of T.
VIII. T is the brother of R.

➘ Here, ⊕ sign symbolises a male and S sign symbolises a female.

K Memory *Add-ons*

- Firstly try to find out the two persons among whom the relation is to be found. Then, based on the relations between the other members of the family given as intermediaries, try to establish the relation between the two required persons.
- Never predict the gender of a person on the basis of name, unless otherwise it is mentioned, as it may lead to a wrong answer.
- Correlating the relations given in question with your personal relations will help you to understand the question in a better way.
- Always use pictorial representation to solve the question because in this form you can systematically arrange the data and this will make easy for a student to understand the relations.

Type 1 Blood Relation Based on Conversation

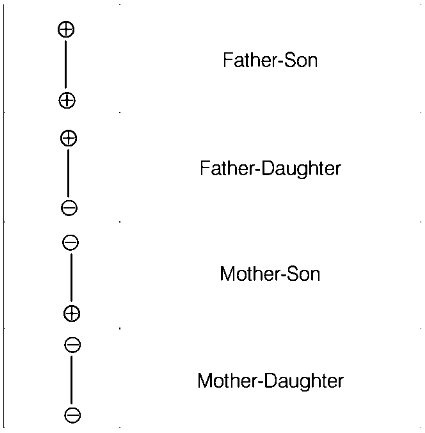
In such questions, a person gives information to another person either about a particular person in a photograph or a person present in front of him. Using this information, a candidate is required to establish a relationship between a given person and the person in the photograph/the person about whom the information is provided.

➘ When pointing to a picture it may be possible that a person is pointing towards himself in the picture but when a person points to another person, then it is not possible that the person is himself.

Important Symbols

Some important symbols which are generally used to represent family relations for establishing relationship between the individuals are given in following table:

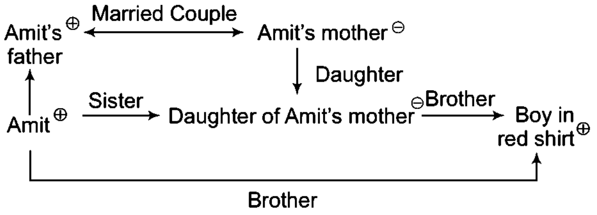
Symbols	Meaning
⊕	Male
S	Female
⊕ ⟷ S	Husband-Wife (Married couple)
⊕ — ⊕	Brother-Brother
S — S	Sister-Sister
⊕ — S	Brother-Sister



***Ex* 1** Amit said to Mohan, "That boy in red shirt is younger of the two brothers of the daughter of my father's wife". How is the boy in red shirt related to Amit?

(a) Father (b) Uncle (c) Brother (d) Nephew

Sol. (*c*) Following family diagram can be drawn from the given information

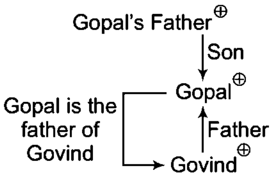

Amit's father ⊕
Married Couple
Amit's mother ⊖
Daughter
Amit ⊕
Sister
Daughter of Amit's mother ⊖
Brother
Boy in red shirt ⊕
Brother

Now, it is clear that the boy in red shirt is the brother of Amit.

***Ex* 2** Gopal said, pointing to Govind, "His father is my father's only son". How is Gopal related to Govind? **[SSC (FCI) 2012]**

(a) Grandfather (b) Grandson (c) Son (d) Father

Sol. (*d*) Let us draw the family diagram,

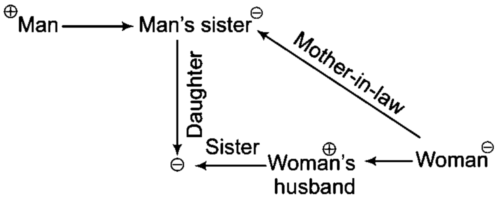

Gopal's Father ⊕
Son
Gopal ⊕
Father
Govind ⊕
Gopal is the father of Govind

Clearly, the only son of Gopal's father is Gopal himself. This means Gopal is the father of Govind.

***Ex* 3** A woman said to a man, "The daughter of your only sister is the sister of my husband". What is the relation of man's sister to the woman? **[MAT 2008]**

(a) Mother (b) Mother-in-law (c) Data inadequate (d) None of these

Sol. (*b*) The family diagram showing the relation is drawn as

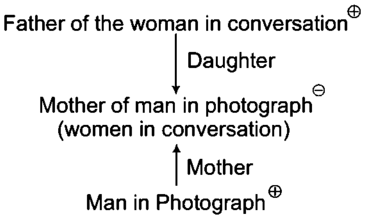

⊕ Man
Man's sister ⊖
Mother-in-law
Daughter
⊖
Sister
Woman's husband ⊕
Woman ⊖

Hence, the man's sister is mother-in-law of woman.

***Ex* 4** Pointing to a man in a photograph, a man said to a woman, "His mother is the only daughter of your father". How is the woman related to the man in the photograph? **[SSC (CPO) 2009]**

(a) Sister (b) Mother (c) Wife (d) Daughter

Sol. (*b*) Let us draw the following family diagram

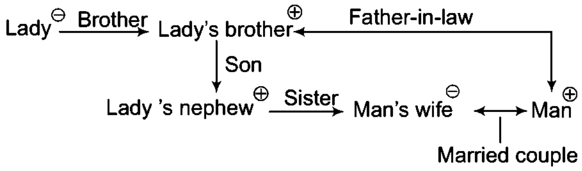

Father of the woman in conversation ⊕
Daughter
Mother of man in photograph (women in conversation) ⊖
Mother
Man in Photograph ⊕

Now, it is clear that the only daughter of the woman's father is the woman herself and hence, the man in the photograph is her son. Therefore, woman is the mother of the man in the photograph.

Ex **5** Pointing to a lady a man said, "The son of her only brother is the brother of my wife." How is the lady related to the man? **[MAT 2008]**

(a) Mother's sister (b) Grandmother (c) Mother-in-law (d) Sister of father-in-law

Sol. (*d*) Let us draw the family diagram from the given information as follows



Now, it is clear that the lady is the sister of man's father-in-law.

Ex **6** Pointing to a photograph Yuvraj says, "He is the only brother of the only daughter of my sister's maternal grandmother". Pointing to another photograph Sourav says "he is the only brother of the only daughter of my sister's maternal grandmother". If among the two photographs, one was either of Sourav of Yuvraj and the photograph, towards which Yuvraj was pointing, was not of Sourav, then how is Yuvraj related to Sourav? **[IIFT 2008]**

(a) Paternal uncle (b) Maternal uncle (c) Grandfather (d) None of these

Sol. (*b*) According to Yuvraj, the only daughter of my sister's maternal grandmother means Yuvraj's mother and man in photograph is the only brother of Yuvraj's mother. So, man in photograph is the maternal uncle of Yuvraj. Similarly, another man in photograph is the maternal uncle of Sourav. Again, it is given that among the two photographs, one was either of Sourav or Yuvraj and the photograph towards which Yuvraj was pointing was not of Sourav, then that towards which Sourav was pointing is definitely of Yuvraj. Hence, Yuvraj is maternal uncle of Sourav.

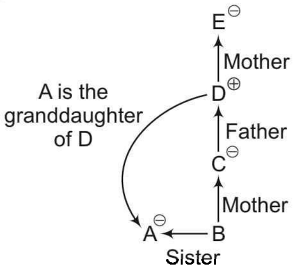
Type 2 Blood Relation Based on Puzzles

In such questions, more than one information in the form of some puzzle is given and based on the informations, a candidate is required to deduce the relation between the two individuals.

Ex **7** If A is B's sister, C is B's mother, D is C's father and E is D's mother, then how is A related to D? **[SSC (DEO) 2010]**

(a) Granddaughter (b) Daughter (c) Aunt (d) Father

Sol. (*a*) Let us draw a family diagram from the given information, as follows

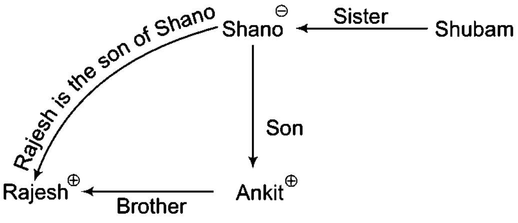


Now, it is clear that A is the granddaughter of D.

Ex **8** Rajesh is the brother of Ankit. Shano is the sister of Shubham. Ankit is the son of Shano. How is Rajesh related to Shano?

(a) Father (b) Brother (c) Son (d) Nephew

Sol. (*c*) Let us draw the family diagram from the given information, as follows



Now , it is clear that Rajesh is the son of Shano.

Directions (Example Nos. 9-12) Read the following information carefully and answer the questions given below.

There are six children playing football, namely P,Q,R, S, T and U. P and T are brothers, U is the sister of T. R is the only son of P's uncle, Q and S are the daughters of the only brother of R's father. **[MAT 2011]**

***Ex* 9** How is R related to U?

(a) Cousin (b) Brother (c) Son (d) Uncle

***Ex* 10** How many male players are there?

(a) One (b) Three (c) Four (d) Five

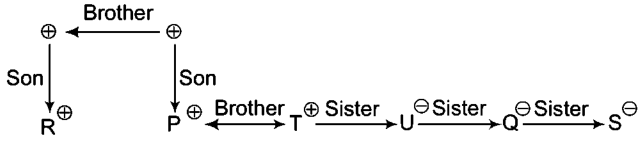
***Ex* 11** How many female players are there?

(a) One (b) Two (c) Three (d) Four

***Ex* 12** How is S related to P?

(a) Uncle (b) Sister (c) Niece (d) Cousin

Solutions (Example Nos. 9-12) *Let us draw the family diagram with the help of given information*



9. (*a*) R is the cousin of U.

10. (*b*) Clearly, there are three male players among them.

11. (*c*) Number of female players is 3.

12. (*b*) S is the sister of P.

Practice Corner **11.1**

Build your Confidence...

1. Introducing Alka to guests, Brijesh said, "Her father is the only son of my father". How is Alka related to Brijesh?

(a) Daughter (b) Mother
(c) Sister (d) Niece

2. Neelam, who is Rohit's daughter, says to Indu, Your mother Reeta is the younger sister of my father, who is third child of Sohanji". How is Sohanji related to Indu?

(a) Maternal uncle (b) Father
(c) Grandfather (d) Father-in-law

3. C is the mother of A and B. If D is the husband of B, then what is C to D? **[SSC (10+2) 2013]**

(a) Mother (b) Aunt
(c) Mother-in-law (d) Sister

4. Pointing towards a woman, Suresh said, "She is the daughter of my father's sister". How is the woman related to Suresh? **[UCO Bank (PO) 2011]**

(a) Brother (b) Cousin
(c) Uncle (d) Sister
(e) None of these

5. Moni is daughter of Sheela. Sheela is wife of my wife's brother. How Moni is related to my wife?

(a) Cousin (b) Niece
(c) Sister (d) Sister-in-law

6. If Neena says, "Anita's father Raman is the only son of my father-in-law, Mahipal", then how is Bindu, who is the sister of Anita, related to Mahipal?

(a) Niece (b) Daughter
(c) Wife (d) Granddaughter

7. Q is the son of P. X is the daughter of Q. R is the aunt (bua) of X and L is the son of R, then what is L's relation with P? **[SSC (Constable) 2012]**

(a) Grandson (b) Granddaughter
(c) Daughter (d) Nephew

8. Markandey is Rajiv's mother's father. Markandey has three brothers. One of them has grandson Abhi. Rajan is son of Abhi. Rajan is related to Rajiv as

(a) brother (b) nephew
(c) cousin (d) uncle

9. Looking at a photograph, a person said, "I have no brother or sister but that man's father is my father's son". At whose photograph was the person looking at? **[SSC (10+2) 2011]**

(a) His son's (b) His nephew's
(c) His father's (d) His own

10. Looking at a woman sitting next to him, Amit said, "She is the sister of the husband of my wife". How is the woman related to Amit? **[SSC (CGL) 2013]**

(a) Niece (b) Daughter (c) Sister (d) Wife

11. Raghu and Babu are twins. Babu's sister is Reema. Reema's husband is Rajan. Raghu's mother is Lakshmi. Lakshmi's husband is Rajesh. How is Rajesh related to Rajan? **[SSC (10+2) 2012]**

(a) Uncle (b) Son-in-law
(c) Father-in-law (c) Cousin

12. B is the father of Q. B has only two children. Q is the brother of R. R is the daughter of P. A is the granddaughter of P and S is the father of A. How is S related to Q? **[IDBI Bank (PO) 2011]**

(a) Son (b) Son-in-law
(c) Brother (d) Brother-in-law
(e) None of these

13. Introducing Asha to guests, Bhaskar said, "Her father is the only son of my father". How is Asha related to Bhaskar? **[SSC (Multitasking) 2014]**

(a) Niece (b) Grand daughter
(c) Mother (d) Daughter

14. Pointing towards a girl, Mihir said, "She is the only daughter of only child of my grandfather". How is the girl related to Mihir? **[IBPS (PO) 2011]**

(a) Daughter (b) Niece
(c) Sister (d) Data inadequate
(e) None of these

15. Fatima while introducing Mustafa to her husband said, "His brother's father is the only son of my grandfather". How is Fatima related to Mustafa? **[SSC (Steno) 2012]**

(a) Aunt (b) Sister (c) Niece (d) Mother

16. Pointing to a woman in the photograph, Rajesh said, "The only daughter of her grandfather is my wife". How Is Rajesh related to that woman?

(a) Uncle (b) Father
(c) Maternal Uncle (d) Brother

17. Kusuma is the wife of Ravi. Govind and Prabhu are brothers. Govind is the brother of Ravi. Prabhu is Kusuma's …… . **[SSC (FCI) 2012]**

(a) Cousin (b) Brother
(c) Brother-in-law (d) Uncle

18. In a family of five persons, Dinesh is Jairam's son and Gopal's brother while Meeta is Gopal's mother and Jayanti's daughter. If there are no step brothers or half brothers in the family, which of the following statements is true? **[IB (ACIO) 2012]**

(a) Jayanti is Dinesh's mother
(b) Meeta is Dinesh's mother
(c) Jayanti is Jairam's grandmother
(d) All of the above

19. Mathew told his friend Sham, pointing to a photograph, "Her father is the only son of my mother." The photograph is of whom? **[SSC (10+2) 2011]**

(a) Mathew's niece (b) Mathew's mother
(c) Mathew's daughter (d) Mathew's sister

20. D is K's brother. M is K's sister. T is R's father who is M's brother, F is K's mother. Atleast how many sons do T and F have? **[SBI (PO) 2011]**

(a) 2 (b) 3
(c) 4 (d) Data inadequate
(e) None of these

21. Pointing towards a photograph, Binod said, "she is the daughter of my wife's mother's only daughter". How is Binod related to the girl in the photograph? **[LIC ADO 2011]**

(a) Cousin (b) Uncle
(c) Father (d) Cannot be determined
(e) None of these

22. Pointing towards a girl, Arun said, "she is the only daughter of my grandfather's son". How is that girl related to Arun? **[Syndicate Bank (Clerk) 2011]**

(a) Daughter (b) Sister
(c) Cousin (d) Data inadequate
(e) None of these

23. Pointing towards a photograph, Ram said, "She is the mother of my brother's son's wife's sister". How is the lady in the photograph related to Ram's brother? **[SSC (CPO) 2012]**

(a) Sister (b) Daughter-in-law
(c) Daughter (d) None of these

24. Introducing a man, a woman said, "His wife is the only daughter of my mother." How is the woman related with the man? **[SSC (Steno) 2011]**

(a) Sister-in-Law (b) Wife
(c) Aunt (d) Mother-in-law

25. Pointing to a lady Simon said, " She is the daughter of the only sister of my father." How is lady related to Simon? **[SSC (10+2) 2013]**

(a) Mother (b) Aunt
(c) Sister (d) Cousin sister

Directions (Q. Nos. 26-29) Read the following information carefully to answer the questions that follow.

I. A, B, C, D, E and F are the 6 members of a family.
II. F is the granddaughter of E.
III. D is the grandmother of A.
IV. C is mother of F and wife of B.
V. B's mother is D.
VI. There are two married couples in the family.

26. How many males are there in the family?
(a) 4
(b) 3
(c) 2
(d) Cannot be determined

27. What is C's relation with A?
(a) Mother
(b) Grandmother
(c) Daughter
(d) Cannot be determined

28. Take out the true statement.
(a) A is sister of F
(b) A is F's brother
(c) D has two grandsons
(d) None of the above

29. Who among the following is one of the couples?
(a) EB
(b) DE
(c) CD
(d) Cannot be determined

30. A, Q, Y and Z are different persons. Z is the father of Q. A is the daughter of Y and Y is the son of Z. If P is the son of Y and B is the brother of P, then **[CG PSC 2012]**
(a) B and Y are brothers
(b) A is the sister of B
(c) Z is the uncle of B
(d) Q and Y are brothers

Directions (Q. Nos. 31-33) Read the following information carefully to answer the questions.

Mr and Mrs Sharma has two children Asha and Shashi. Shashi has married to Radha who is daughter of Mr Mahajan who is married to Reeta, Sonu and Rocky are the children of Suresh and Reeta. Uma and Sudha are daughters of Shashi and Radha.

31. What is the surname of Sonu?
(a) Mahajan
(b) Sharma
(c) Shashi
(d) None of the above

32. What is the relation of Suresh to Sudha?
(a) Brother
(b) Uncle
(c) Maternal grandfather
(d) Niece

33. What is the relation of Sudha to Asha?
(a) Sister
(b) Niece
(c) Aunt
(d) Daughter

Directions (Q. Nos. 34-39) Read the following information carefully to answer the questions that follow.

I. There is a family of six members.
II. Members are A, B, C, D, E and F.
III. A and B are married couple, B being the female member.
IV. B is the daughter-in-law of F.
V. D is the only son of C.
VI. E is the sister of D.
VII. F's husband is not alive.
VIII. C is A's brother.

34. How is F related to C?
(a) Sister
(b) Mother
(c) Aunt
(d) Mother-in-law

35. How is E related to C?
(a) Mother
(b) Aunt
(c) Cousin
(d) Daughter

36. Who is C to B?
(a) Nephew
(b) Brother
(c) Brother-in-law
(d) Son-in-law

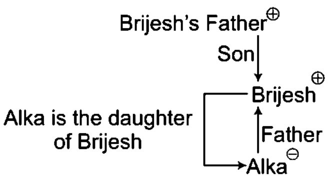
37. How is F related to A?
(a) Sister
(b) Sister-in-law
(c) Mother
(d) Mother-in-law

38. How many males are there in the family?
(a) 5
(b) 4
(c) 3
(d) 2

39. How many females are there in the family?
(a) 4
(b) 3
(c) 5
(d) 2

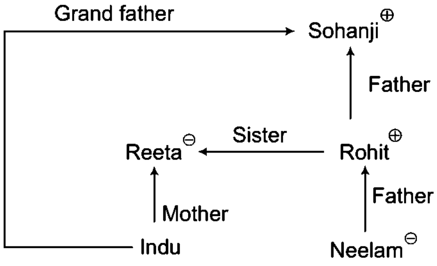
Response & Interpretations **(11.1)**

1. (*a*) Let us draw the family diagram


Brijesh's Father
Son
Brijesh
Alka is the daughter of Brijesh
Father
Alka

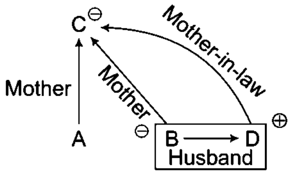
Clearly, the only son of Brijesh's father is Brijesh himself. This means Brijesh is the father of Alka. Hence, Alka is the daughter of Brijesh.

2. (*c*) Following family diagram can be drawn based on the given information


Grand father
Sohanji
Father
Sister
Reeta
Rohit
Mother
Father
Indu
Neelam

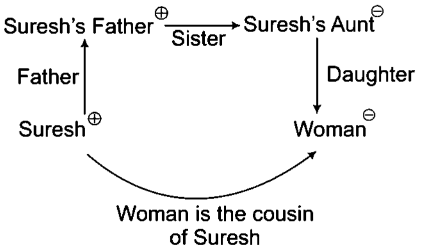
Now, it is clear that Sohanji is the grandfather of Indu.

3. (*c*)


C
Mother-in-law
Mother
Mother
A
B
D
Husband

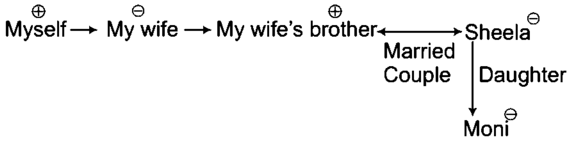
So, C is mother-in-law of D.

4. (*b*) Let us draw the family diagram


Suresh's Father
Sister
Suresh's Aunt
Father
Daughter
Suresh
Woman
Woman is the cousin of Suresh

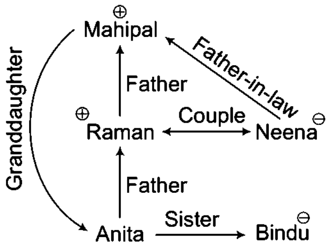
Clearly, sister of Suresh's father is Suresh's aunt and daughter of aunt is cousin. Hence, woman is the cousin of Suresh.

5. (*b*)


Myself
My wife
My wife's brother
Sheela
Married Couple
Daughter
Moni

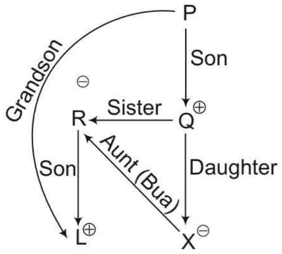
So, Moni is niece of my wife.

6. (*d*)


Mahipal
Father-in-law
Granddaughter
Father
Couple
Raman
Neena
Father
Sister
Anita
Bindu

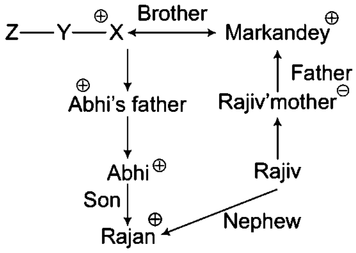
So, Bindu is granddaughter of Mahipal.

7. (*a*) Let us draw the family diagram


P
Grandson
Son
Sister
R
Q
Aunt (Bua)
Son
Daughter
L
X

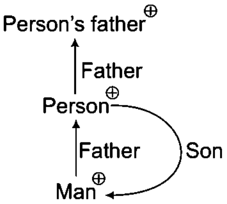
Hence, L is the grandson of P.

8. (*b*)


Z—Y—X
Brother
Markandey
Father
Abhi's father
Rajiv'mother
Abhi
Rajiv
Son
Nephew
Rajan

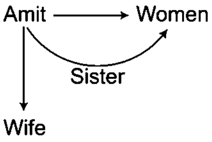
So, Rajan is nephew of Rajiv.

9. (*a*) Let us draw the family diagram


Person's father
Father
Person
Son
Father
Man

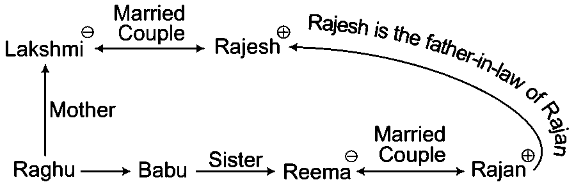
The only child of persons's father is the person himself. So, the man in photograph is his own son.

10. (*c*)


Amit
Women
Sister
Wife

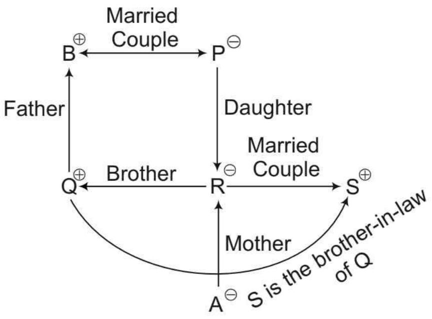
Husband of Amit's wife is Amit himself and his sister is the sister of Amit.

11. (*c*) Let us draw the family diagram


Lakshmi ⊖
Married Couple
Rajesh ⊕
Rajesh is the father-in-law of Rajan
Mother
Raghu
Babu
Sister
Reema ⊖
Married Couple
Rajan ⊕

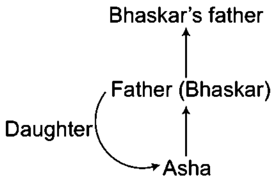
So, it is clear that Rajesh is the father-in-law of Rajan.

12. (*d*) Let us draw the family diagram


Married Couple
B ⊕
P ⊖
Father
Daughter
Married Couple
Q ⊕
Brother
R ⊖
S ⊕
Mother
A ⊖
S is the brother-in-law of Q

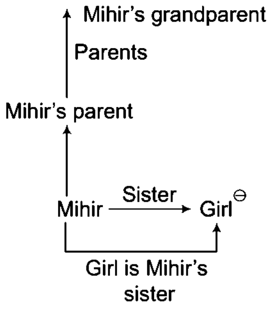
Hence, S is the brother-in-law of Q.

13. (*d*)


Bhaskar's father
Father (Bhaskar)
Daughter
Asha

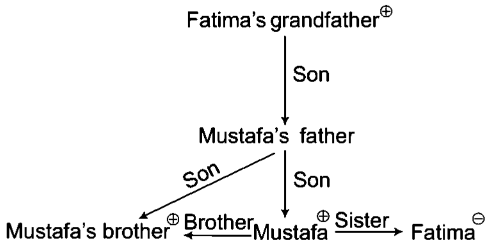
Only son of Bhaskar's father is Bhaskar himself. Therefore, Asha's father is Bhaskar. Hence, Asha is the daughter of Bhaskar.

14. (*c*) Let us draw the family diagram


Mihir's grandparent
Parents
Mihir's parent
Mihir
Sister
Girl ⊖
Girl is Mihir's sister

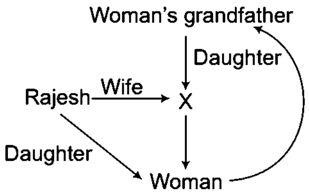
Clearly, only child of Mihir's grandfather is Mihir's father/mother and only daughter of Mihir's father/mother is Mihir's sister. Hence, the girl is Mihir's sister.

15. (*b*) Let us draw the family diagram


Fatima's grandfather ⊕
Son
Mustafa's father
Son
Son
Mustafa's brother ⊕
Brother
Mustafa ⊕
Sister
Fatima ⊖

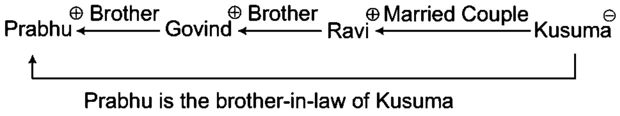
So, it is clear that Fatima is the sister of Mustafa.

16. (*b*)


Woman's grandfather
Daughter
Rajesh
Wife
X
Daughter
Woman

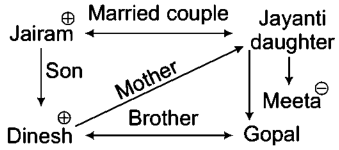
So, Rajesh is father of that woman.

17. (*c*) Let us draw the family diagram


Prabhu ⊕
Brother
Govind ⊕
Brother
Ravi ⊕
Married Couple
Kusuma ⊖
Prabhu is the brother-in-law of Kusuma

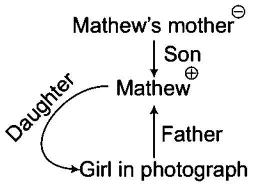
Clearly, Prabhu is the brother-in-law of Kusuma.

18. (*b*) Let us draw the family diagram


Jairam ⊕
Married couple
Jayanti daughter
Son
Mother
Meeta ⊖
Dinesh ⊕
Brother
Gopal

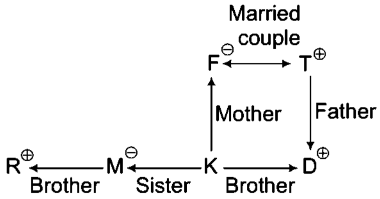
Now, it is clear that Meeta is Dinesh's mother.

19. (*c*) Let us draw the family diagram


Mathew's mother ⊖
Son
Mathew ⊕
Daughter
Father
Girl in photograph

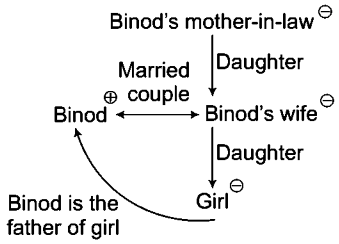
Clearly, her father is the only son means Mathew himself and the photograph is of Mathew's daughter.

20. (*a*) Let us draw the family diagram


Married couple
F ⊖
T ⊕
Mother
Father
R ⊕
M ⊖
K
D ⊕
Brother
Sister
Brother

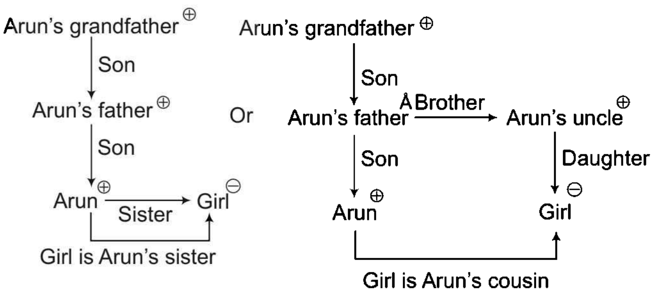
Clearly, R, M, K and D are the children of T and F in which M is a female and gender of K is not known but R and D are the male children of F and T. Hence, T and F have atleast two sons.

21. (*c*) Let us draw the family diagram


Binod's mother-in-law ⊖
Daughter
Married couple
Binod ⊕
Binod's wife ⊖
Daughter
Girl ⊖
Binod is the father of girl

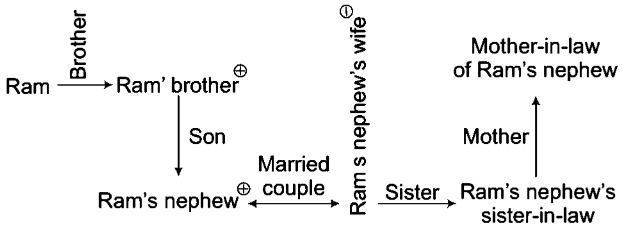
Clearly, Binod's wife's mother's only daughter is Binod's wife and Binod's wife's daughter (the girl in the photograph) will definitely be Binod's daughter. Hence, Binod will be the father of the girl in the photograph.

22. (*d*) Arun's grandfather's son can be Arun's father or Arun's uncle. Therefore, we have to draw the two diagrams, as follows


Arun's grandfather
Son
Arun's father
Son
Arun
Sister
Girl
Girl is Arun's sister
Or
Arun's grandfather
Son
Arun's father
Brother
Arun's uncle
Son
Daughter
Arun
Girl
Girl is Arun's cousin

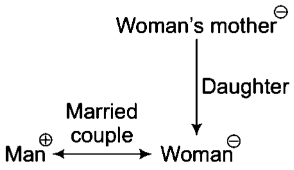
Clearly, the above diagrams make it clear that girl is either sister or cousin of Arun. Here, no definite relation can be established between Arun and girl on the basis of given information. Hence, the data is inadequate to answer the question.

23. (*d*) Let us draw the family diagram


Ram
Brother
Ram' brother
Son
Ram's nephew
Married couple
Ram s nephew's wife
Sister
Ram's nephew's sister-in-law
Mother
Mother-in-law of Ram's nephew

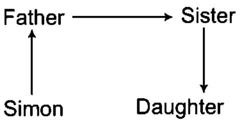
Hence, it is clear that the lady in the photograph is mother-in-law of Ram's nephew.

24. (*b*) Let us draw the family diagram


Woman's mother
Daughter
Married couple
Man
Woman

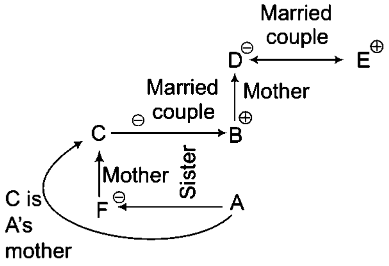
So, it is clear that woman is the wife of that man.

25. (*d*)


Father
Sister
Simon
Daughter

Thus, the lady is cousin sister of Simon.

Solutions (Q. Nos. 26-29) *Let us make the family diagram*


Married couple
D
E
Married couple
Mother
C
B
Mother
Sister
F
A
C is A's mother

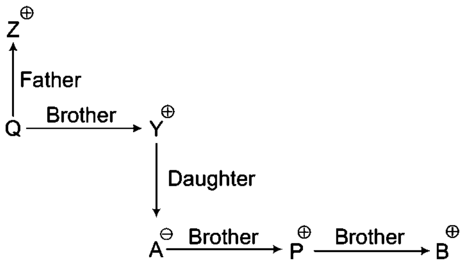
26. (*d*) As gender of A is not known, so it cannot be determined.

27. (*a*) C is A's mother.

28. (*d*) As gender of A is not known, none of the statements is correct.

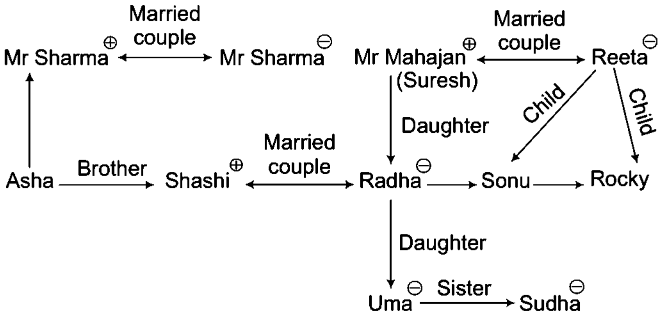
29. (*b*) Family has two couples CB and DE.

30. (*b*) Let us draw the family diagram


Z
Father
Q
Brother
Y
Daughter
A
Brother
P
Brother
B

From the above diagram, it is clear that A is the sister of B.

Solutions (Q. Nos. 31-33) *Let us make the family diagram*

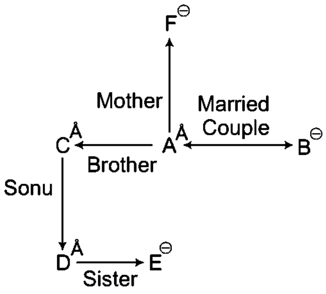

Mr Sharma
Married couple
Mr Sharma
Mr Mahajan (Suresh)
Married couple
Reeta
Asha
Brother
Shashi
Married couple
Radha
Sonu
Rocky
Daughter
Child
Child
Daughter
Uma
Sister
Sudha

31. (*a*) It is clear from the above graph that the surname of Sonu is Mahajan.

32. (*c*) It is clear from the above graph that Suresh is maternal grandfather of Sudha.

33. (*b*) It is clear from the above graph that Sudha is niece of Asha.

Solutions (Q. Nos. 34-39) *Let us make the family diagram*


F
Mother
Married Couple
C
A
B
Brother
Sonu
D
E
Sister

34. (*b*) F is C's mother.

35. (*d*) E is C's daughter.

36. (*c*) C is B's brother-in-law.

37. (*c*) F is the mother of A.

38. (*c*) Males are A, C and D.

39. (*b*) Females are B, E and F.

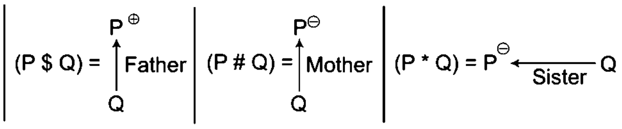
Type 3 Symbolically Coded Blood Relationship

In such questions certain symbols and codes such as +, −, ×, ÷, \$, *, Δ etc., are used to present information in coded form. The candidate is required to decode the information with the help of symbols to be used for making family diagram and then find out the relationship between the two required persons.

***Ex* 13** If P \$ Q means 'P is the father of Q, P # Q means 'P is the mother of Q, P * Q means P is the sister of Q. Then, how is Q related to N in N # L \$ P * Q?

(a) Grandson (b) Granddaughter (c) Nephew (d) Data inadequate

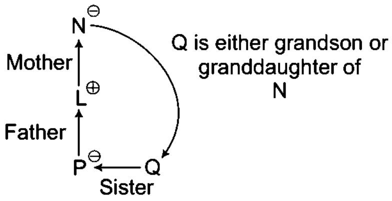
Sol. (*d*) By decoding given information with symbols of family diagram, we get



(P \$ Q) =
P ⊕
Father
Q
(P # Q) =
P ⊖
Mother
Q
(P * Q) = P ⊖
Sister
Q

Now, by applying above decoding method,

We draw the following family diagram (N # L \$ P * Q),



N ⊖
Mother
L ⊕
Father
P ⊖
Sister
Q
Q is either grandson or granddaughter of N

Clearly, the gender of Q cannot be determined from the given information and hence, Q can either be grandson or granddaughter of N. Therefore, we can say that data is inadequate to establish a relationship between N and Q.

Directions (Q. Nos. 14-15) Read the following information carefully and answer the questions given below.

[PNB (PO) 2010]

I. 'P × Q' means 'P is sister of Q'.
II. 'P + Q' means 'P is mother of Q'.
III. 'P − Q' means 'P is father of Q'.
IV. 'P ÷ Q' means 'P is brother of Q'.

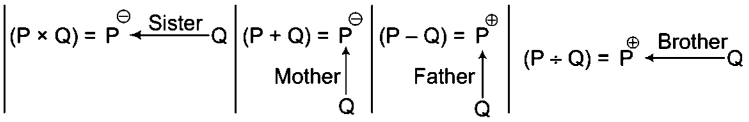
***Ex* 14** Which of the following represents 'M is the nephew of R'?

(a) M ÷ T − R (b) R ÷ T − M (c) R × T + M × J (d) R ÷ T − M ÷ J
(e) None of these

***Ex* 15** Which of the following represents 'W is grandfather of H'?

(a) W + T − H (b) W ÷ T − H (c) W × T + H (d) W ÷ T + H
(e) None of these

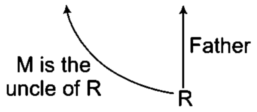
Solutions (Q. Nos. 14-15) *By decoding given information with symbols of family diagram, we get*



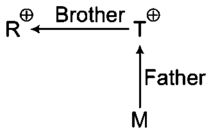
(P × Q) = P ⊖
Sister
Q
(P + Q) = P ⊖
Mother
Q
(P − Q) = P ⊕
Father
Q
(P ÷ Q) = P ⊕
Brother
Q

14. (*d*) By applying above decoding method, we can check all the options for the required relationship.

(a) (M ÷ T − R) = Rejected

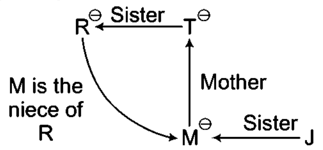

M⊕
Brother
T⊕
Father
M is the uncle of R
R

(b) (R ÷ T − M) = Rejected

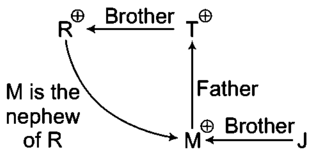

R⊕
Brother
T⊕
Father
M

Here, gender of M is not known. So, M is either niece or nephew of R.

(c) (R × T + M × J) = Rejected


R⊖
Sister
T⊖
M is the niece of R
Mother
M⊖
Sister
J

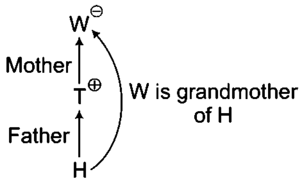
(d) (R ÷ T − M ÷ J) = Selected


R⊕
Brother
T⊕
M is the nephew of R
Father
M
⊕ Brother
J

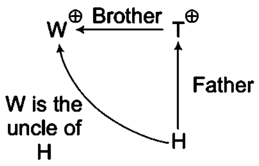
Hence, only option (d) satisfies the given relation between M and R.

15. (*e*) By applying above decoding method, we can check all the options for the required relationship.

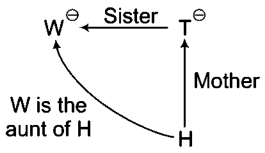
(a) (W + T − H) = Rejected


W⊖
Mother
T⊕
W is grandmother of H
Father
H

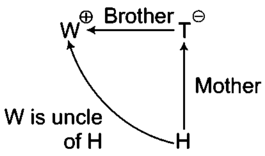
(b) (W ÷ T − H) = Rejected


W⊕
Brother
T⊕
Father
W is the uncle of H
H

(c) (W × T + H) = Rejected


W⊖
Sister
T⊖
Mother
W is the aunt of H
H

(d) (W ÷ T + H) = Rejected


W⊕
Brother
T⊖
Mother
W is uncle of H
H

There is no option which satisfies the required relationship between W and H. So, option (e) is correct to answer.

Memory *Add-ons*

- If in a coded language 'A + B' means 'A is the father of B', then it is confirmed that A is male but nothing can be predicted about the gender of B (either B is son or daughter).
- If in a coded language 'A ÷ B' means 'A is the wife of B', then in this case, it is confirmed that A is female and the gender of B is also confirmed that he is male as B is the husband.

Practice Corner **11.2**

Build your Confidence...

1. If 'A × D' means 'A is sister of D', 'A + D' means 'D is the daughter of A' and 'A ÷ D' means 'A is the mother of D', then how will 'N is the aunt of M' be denoted? **[SBI (PO) 2009]**

(a) M + L × N
(b) M ÷ L + N
(c) L × N ÷ M
(d) N × L ÷ M
(e) None of the above

Directions (Q. Nos. 2-3) Read the following information carefully to answer the questions that follow.

I. 'A + B' means 'A is the son of B'.
II. 'A − B' means 'A is the wife of B'.
III. 'A × B' means 'A is the brother of B'.
IV. 'A ÷ B' means 'A is the mother of B'.
V. 'A = B' means 'A is the sister of B'.

2. What does 'P × R ÷ Q' mean?

(a) P is the nephew of Q
(b) P is the uncle of Q
(c) P is the brother of Q
(d) P is the father of Q

3. What does '$P = R \div Q$' mean?

(a) P is the aunt of Q
(b) Q is the daughter of P
(c) P is the sister of Q
(d) Q is the niece of P

Directions (Q. Nos. 4-5) Read the following information carefully and answer the questions that follow.

I. $P + Q$ means P is the father of Q.
II. $P - Q$ means P is the wife of Q.
III. $P \times Q$ means P is the brother of Q.
IV. $P \div Q$ means P is the daughter of Q.

4. If $A \div C + D + B$, then which of the following statement is true?

(a) A is the daughter of B
(b) B is the aunt of A
(c) A is the aunt of B
(d) A is the mother of B

5. If $A - C + B$, then which of the following statements is true?

(a) A is the daughter of B
(b) B is the aunt of A
(c) A is the mother of B
(d) A is the aunt of B

Directions (Q. Nos. 6-8) Read the following information carefully and answer the questions given below. **[Corporation Bank (PO) 2006]**

I. '$P \times Q$' means 'P is the father of Q'.
II. '$P - Q$' means 'P is the sister of Q'.
III. '$P + Q$' means 'P is the mother of Q'.
IV. '$P \div Q$' means 'P is the brother of Q'.

6. In the expression $B + D \times M \div N$, how is M related to B?

(a) Granddaughter
(b) Son
(c) Grandson
(d) Granddaughter or Grandson
(e) None of these

7. Which of the following represent 'J is the son of F'?

(a) $J \div R - T \times F$
(b) $J + R - T \times F$
(c) $J \div M - N \times F$
(d) Cannot be determined
(e) None of these

8. Which of the following represents 'R is the niece of M'?

(a) $M \div K \times T - R$
(b) $M - J + R - N$
(c) $R - M \times T \div W$
(d) Cannot be determined
(e) None of these

Directions (Q. Nos. 9-12) Study the following information carefully to answer these questions. **[SBI (PO) 2005]**

I. 'A $ B' means 'A is mother of B'.
II. 'A # B' means 'A is the father of B'.
III. 'A @ B' means 'A is the husband of B'.
IV. 'A % B' means 'A is daughter of B'.

9. P@Q$M#T indicates what relationship of P with T?

(a) Maternal grandfather
(b) Paternal grandfather
(c) Maternal grandmother
(d) Cannot be determined
(e) None of these

10. Which of the following expressions indicates 'R is the sister of H'?

(a) R$D@F#H (b) H%D@F$R (c) R%D@F$H (d) H$D@F#R
(e) None of these

11. If F@D%K#H, then how is F related to H?

(a) Brother-in-law
(b) Sister
(c) Sister-in-law
(d) Cannot be determined
(e) None of these

12. Which of the following expressions indicates 'H is the brother of N'?

(a) N%F@D$H
(b) N%F@D%H
(c) N%F@D$H#R
(d) H#RDN
(e) None of these

Directions (Q. Nos. 13-14) Read the following information carefully to answer the questions that follow. **[IBPS (Clerk) 2011]**

I. '$P + Q$' means 'P is the father of Q'.
II. '$P - Q$' means 'P is the mother of Q'.
III. '$P \times Q$' means 'P is brother of Q'.
IV. '$P \div Q$' means 'P is the sister of Q.

13. Which of the following means 'H' is paternal grandfather of T?

(a) $H + J + T$ (b) $T \times K + H$ (c) $H + J \times T$ (d) $H - J + T$
(e) None of these

14. Which of the following means 'M is maternal uncle of T?

(a) $M \div K - T$ (b) $M \times K - T$ (c) $M \times K + T$ (d) $M \div K + T$
(e) None of these

Directions (Q. Nos. 15-20) Read the following information carefully to answer the questions given below it.

I. '$A + B$' means that 'A is the father of B'.
II. '$A - B$' means that 'A is the wife of B'.
III. '$A \times B$' means that 'A is the brother of B'.
IV. '$A \div B$' means that 'A is the daughter of B'.

15. If it is given '$P \div R + S + Q$', then which of the following is true?

(a) P is the daughter of Q
(b) Q is the aunt of P
(c) P is the aunt of Q
(d) P is the mother of Q

16. If it is given '$P - R + Q$', then which of the following statements is true?

(a) P is the mother of Q
(b) Q is the daughter of P
(c) P is the aunt of Q
(d) P is the sister of Q

17. If it is given $P \times R \div Q$, then which of the following is true?

(a) P is the uncle of Q
(b) P is the father of Q
(c) P is the brother of Q
(d) P is the son of Q

18. If it is given '$P \times R - Q$', then which of the following is true?

(a) P is the brother-in-law of Q (b) P is the brother of Q
(c) P is the uncle of Q (d) P is the father of Q

19. If '$P + R \div Q$', then which of the following is true?

(a) P is the husband of Q (b) P is the brother of Q
(c) P is the son of Q (d) P is the father of Q

20. If '$P - R \times Q$', then which of the following is true?

(a) P is the sister of Q (b) Q is the son of P
(c) Q is the husband of P (d) P is the sister-in-law of Q

21. If '$P - Q$', means Q is son of P, '$P \times Q$' means P is brother of Q, '$P \div Q$' means Q is sister of P and '$P + Q$' means P is mother of Q, then which of the following is definitely true about '$N \times K - M \div L$'? **[SNAP 2013]**

(a) K is father of L and M
(b) L is daughter of K and niece of uncle N
(c) K is father of L and M, his son and daughter respectively
(d) M is uncle of K's brother N

Direction (Q. No. 22) Read the following information carefully to answer the question that follows.

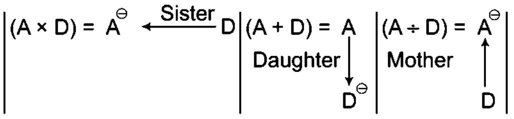
'P – Q' means 'Q is father of P'.
'P * Q' means 'Q is brother of P'.
'P + Q' means 'Q is wife of P'.
'P ÷ Q' means 'Q is sister of P'.

22. Which of the following means M is the grandfather of T? **[IIFT 2013]**

(a) T − C ÷ L + N * M (b) T − R÷ Z+L * M
(c) T ÷ Z * L + F − M (d) None of these

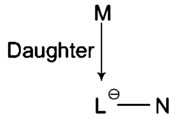
Response & Interpretations (11.2)

1. (*d*) By decoding given information with symbols of family diagram, we get


(A × D) = A⊖
Sister
D
(A + D) = A
Daughter
D⊖
(A ÷ D) = A⊖
Mother
D

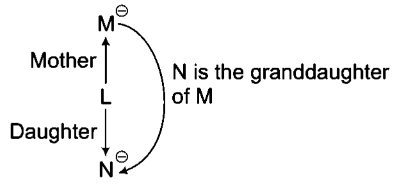
Now, by applying above decoding method, we can check all the options for the required relationship.

(a) (M + L × N) = Rejected

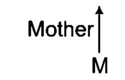

M
Daughter
L⊖
N

So, N is the daughter of M.

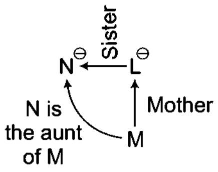
(b) (M ÷ L + N) = Rejected


M⊖
Mother
L
Daughter
N⊖
N is the granddaughter of M

(c) (L × N ÷ M) = Rejected

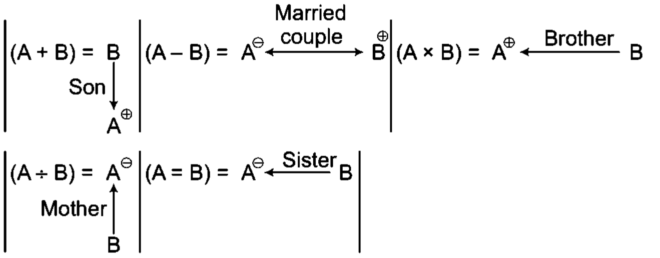

L⊖
Sister
N⊖
Mother
M

(d) (N × L ÷ M) = Selected

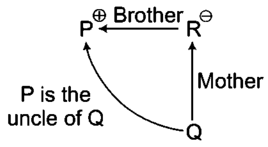

Sister
N⊖
L⊖
N is the aunt of M
Mother
M

Now, it is clear that N is the aunt of M.

Solutions (Q. Nos. 2 - 3) *By decoding given information with symbols of family diagram, we get*

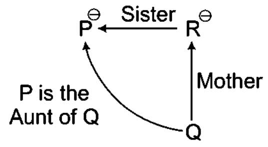

(A + B) = B
Son
A⊕
(A – B) = A⊖
Married couple
B⊕
(A × B) = A⊕
Brother
B
(A ÷ B) = A⊖
Mother
B
(A = B) = A⊖
Sister
B

2. (*b*) By applying above decoding method for (P × R ÷ Q), we draw the following family diagram


P⊕
Brother
R⊖
Mother
Q
P is the uncle of Q

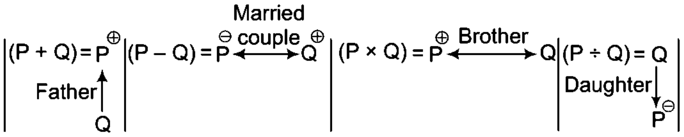
Clearly, P is the uncle of Q.

3. (*a*) By applying above decoding method for (P = R ÷ Q), we draw the following family diagram

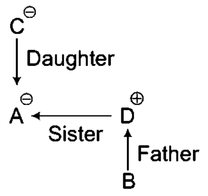

P⊖
Sister
R⊖
Mother
Q
P is the Aunt of Q

Clearly, P is the aunt of Q.

Solutions (Q. Nos. 4-5) *By decoding given information with symbols of family diagram, we get*

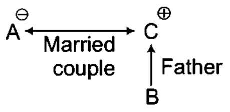

(P + Q) = P⊕
Father
Q
(P – Q) = P⊖
Married couple
Q⊕
(P × Q) = P⊕
Brother
Q
(P ÷ Q) = Q
Daughter
P⊖

4. (*c*) From the given information, following family diagram can be drawn


C⊖
Daughter
A⊖
D⊕
Sister
Father
B

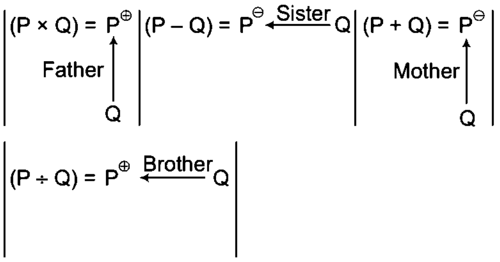
So, it clear that A is the aunt of B.

5. (*c*) From the given information, following family diagram can be drawn

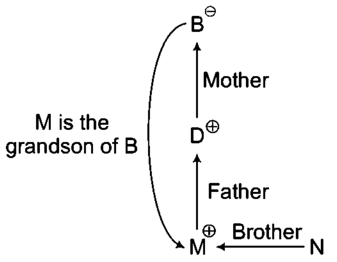

A⊖
C⊕
Married couple
Father
B

Now, it is clear that A is the mother of B.

Solutions (Q. Nos. 6-8) *By decoding given information with symbols of family diagram, we get*


(P × Q) = P⊕
Father
Q
(P – Q) = P⊖ Sister Q
(P + Q) = P⊖
Mother
Q
(P ÷ Q) = P⊕ Brother Q

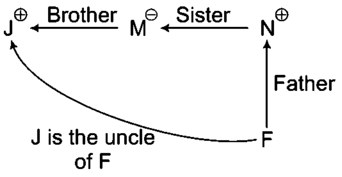
6. (*c*) By applying above method for (B + D × M ÷ N), we draw the following family diagram


B⊖
Mother
M is the grandson of B
D⊕
Father
M⊕
Brother
N

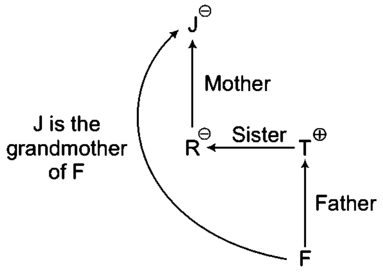
Hence, it is clear that M is the grandson of B.

7. (*e*) By applying above decoding method, we can check all the options for the required relationship.

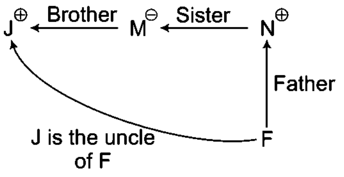
(a) (M ÷ T – R × F) = Rejected


J⊕
Brother
M⊖
Sister
N⊕
Father
J is the uncle of F
F

(b) (J + R – T × F) = Rejected


J⊖
Mother
J is the grandmother of F
R⊖
Sister
T⊕
Father
F

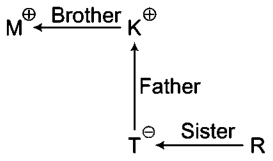
(c) (J ÷ M – N × F) = Rejected


J⊕
Brother
M⊖
Sister
N⊕
Father
J is the uncle of F
F

So, none of the options is correct to answer the question. So, option (e) will follow.

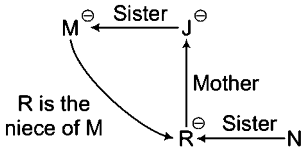
8. (*b*) By applying above decoding method, we can check all the options for the required relationship

(a) (M ÷ K × T – R) = Rejected


M⊕
Brother
K⊕
Father
T⊖
Sister
R

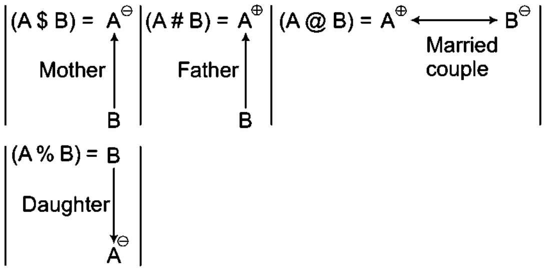
Here, gender of R is not known. So, R is either niece or nephew of M.

(b) (M – J + R – N) = Selected

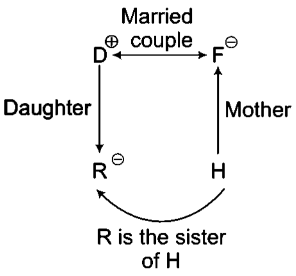

M⊖
Sister
J⊖
Mother
R is the niece of M
R⊖
Sister
N

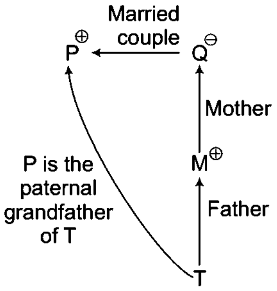
As, we have already obtained the answer, so there is no need to check other options.

Solutions (Q. Nos. 9-12) *By decoding given information with symbols of family diagram, we get*


(A $ B) = A⊖
Mother
B
(A # B) = A⊕
Father
B
(A @ B) = A⊕
B⊖
Married couple
(A % B) = B
Daughter
A⊖

9. (*b*) By applying the above decoding method for (P @ Q $ M # T), we draw the following family diagram

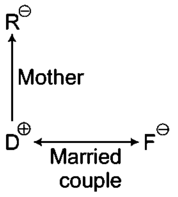

Married couple
D
F
Daughter
Mother
R
H
R is the sister of H


Married couple
P
Q
Mother
M
P is the paternal grandfather of T
Father
T

Hence, P is the paternal grandfather of T.

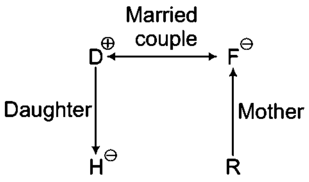
10. (*c*) By applying above decoding method, we can check all the options for the required relationship

(a) (R $ D @ F # H) = Rejected


R
Mother
D
F
Married couple

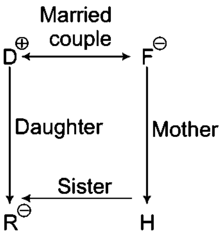
Now, F cannot be related with H as according to given condition for F # H, F must be a male.

(b) (H % D @ F $ R) = Rejected


Married couple
D
F
Daughter
Mother
H
R

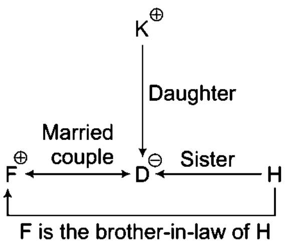
Here, gender of R is not known.So, this option is also rejected.

(c) (R % D @ F $ H) = Selected


Married couple
D
F
Daughter
Mother
Sister
R
H

Hence, no need to check other options.

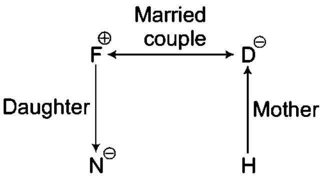
11. (*a*) By applying above decoding method for (F @ D % K # H), we draw the following family diagram


K
Daughter
Married couple
F
D
Sister
H
F is the brother-in-law of H

Hence, F the brother -in-law of H.

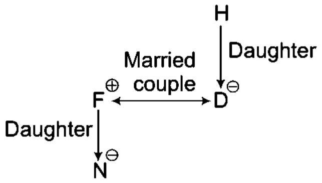
12. (*c*) By applying above decoding method, we can check all the options for the required relationship

(a) (N % F @ D $ H) = Rejected


Married couple
F
D
Daughter
Mother
N
H

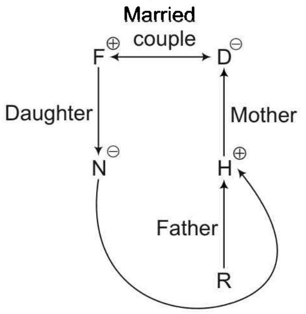
Here, gender of H is not known.So, cannot be determined

(b) (N % F @ D % H) = Rejected


H
Daughter
Married couple
F
D
Daughter
N

Here, gender of H is not known and H can be either grandfather or grandmother of N.

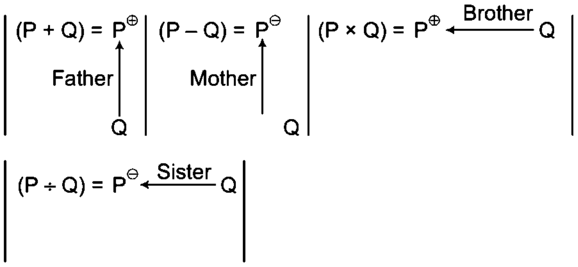
(c) (N % F @ D $ H # R) = Selected


Married couple
F
D
Daughter
Mother
N
H
Father
R

H is the brother of N

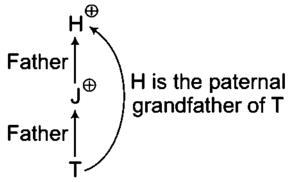
Therefore, there is no need to check other options because we have already obtained the answer.

Solutions (Q. Nos. 13-14) *By decoding given information with symbols of family diagram, we get*


(P + Q) = P
Father
Q
(P – Q) = P
Mother
Q
(P × Q) = P
Brother
Q
(P ÷ Q) = P
Sister
Q

13. (*a*) By applying above decoding method, we can check all the options for the required relationship

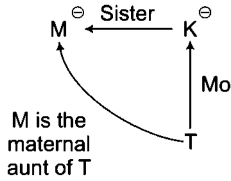
(a) (H + J + T)


H
Father
J
Father
T
H is the paternal grandfather of T

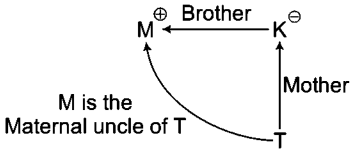
Hence, there is no need to check other options, as we have already obtained the answer.

14. (*b*) By applying above decoding method, we can check all the options for the required relationship

(a) (M ÷ K – T) = Rejected

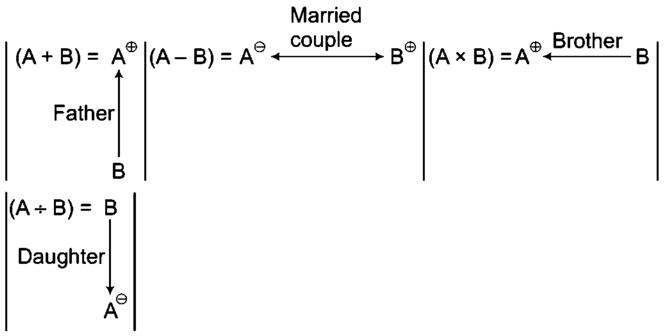

M ⊖
Sister
K ⊖
Mother
M is the maternal aunt of T
T

(b) (M × K – T) = Selected

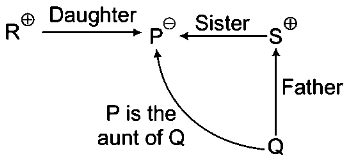

M ⊕
Brother
K ⊖
Mother
M is the Maternal uncle of T
T

Hence, there is no need to check other options.

Solutions (Q. Nos. 15-20) *By decoding given information with symbols of family diagram, we get*

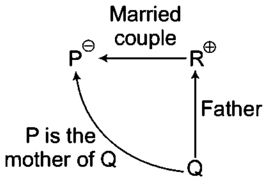

(A + B) = A ⊕
Father
B
(A – B) = A ⊖
Married couple
B ⊕
(A × B) = A ⊕
Brother
B
(A ÷ B) = B
Daughter
A ⊖

15. (*c*) By applying above decoding method for (P÷R+S+Q), we draw the following family diagram


R ⊕
Daughter
P ⊖
Sister
S ⊕
Father
P is the aunt of Q
Q

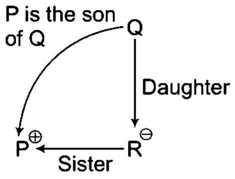
Hence, P is the aunt of Q.

16. (*a*) By applying above decoding method for (P – R + Q), we draw the following family diagram


Married couple
P ⊖
R ⊕
Father
P is the mother of Q
Q

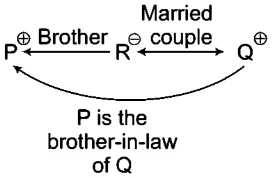
Hence, P is the mother of Q.

17. (*d*) By applying above decoding method for (P× R ÷ Q), we draw the following family diagram


P is the son of Q
Q
Daughter
P ⊕
R ⊖
Sister

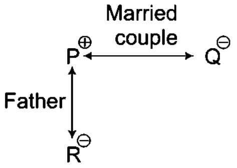
Hence, P is the son of Q.

18. (*a*) By applying above decoding method for (P× R – Q), we get draw the following family diagram


P ⊕
Brother
R ⊖
Married couple
Q ⊕
P is the brother-in-law of Q

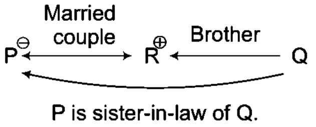
Therefore, P is the brother-in-law of Q.

19. (*a*) By applying above decoding method for (P+ R ÷ Q), we draw the following family diagram


Married couple
P ⊕
Q ⊖
Father
R ⊖

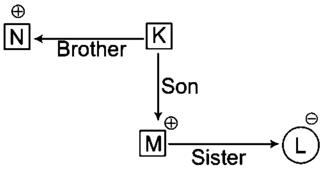
Therefore, P is the husband of Q.

20. (*d*) By applying above decoding method (P – R× Q), we draw the following family diagram


Married couple
P ⊖
R ⊕
Brother
Q
P is sister-in-law of Q.

Therefore, P is sister-in-law of Q.

21. (*b*) N × K – M ÷ L, according to the given information,


⊕
N
Brother
K
Son
⊕
M
Sister
⊖
L

From the figure above, it is clear that L is the daughter of K and niece of uncle N.

22. (*d*) The best method to follow is the option method.

We have to check which option represents M is the grandfather of T.

For M to be the grandfather of T, we have to see the given statements *i.e.,* if P – Q means Q is the father of P.

We need two (–) symbols make the correct answer but none of the options has two symbols (–).

Master Exercise

Take a Leap...

1. 'A' is B's brother. "I have as many sisters as brothers", tells 'B' to one of her friends. How many brothers and sisters are there in this family?

(a) Two brothers and two sisters
(b) One brother and one sister
(c) One brother and two sisters
(d) Two brothers and one sister

2. Showing the lady in the park, Vineet said, "She is the daughter of my grandfather's only son." How is Vineet related to that lady?

(a) Brother (b) Cousin
(c) Father (d) Uncle

3. A man showed a boy next to him and said, "He is the son of my wife's sister-in-law but I am the only child of my parents." How is my son related to him? **[SSC (CGL) 2013]**

(a) Cousin (b) Brother
(c) Uncle (d) Nephew

4. Pointing towards a girl, Anurag says, "This girl is the daughter of the only child of my father". What is the relation of Anurag's wife with the girl? **[CG PSC 2013]**

(a) Sister (b) Aunt
(c) Daughter (d) Mother

5. Sunil is the son of Kesav. Simran, Kesav's sister, has a son Maruti and daughter Sita. Prem is the maternal uncle of Maruti. How is Sunil related to Maruti? **[SSC (CGL) 2013]**

(a) Cousin (b) Uncle
(c) Brother (d) Nephew

6. D is B's father, B is C's sister-in-law and A's daughter. How is A related to D? **[SSC (CPO) 2013]**

(a) Wife (b) Mother
(c) Father (d) Husband

7. A's mother is sister of B and daughter of C. D is the daughter of B and sister of E. How is C related to E? **[IB (ACIO) 2013]**

(a) Sister
(b) Mother
(c) Father
(d) Grandmother or grandfather

Directions (Q. Nos. 8-12) Read the following information carefully to answer the questions that follow.

I. Ruchi and Suresh are married couple having two children, Manisha and Divya.
II. Divya is married to Amit who is the son of Gauri and Tarun.
III. Nishi is the daughter of Amit.
IV. Karuna, who is Amit's sister, is married to Harish and has two sons, Vijay and Parikshit.
V. Gauri is the grandmother of Parikshit.
VI. Manisha is the maternal aunt of Nisha.

8. What is the difference between the number of females and the number of males in the second generation?

(a) 5 (b) 1
(c) 2 (d) 3

9. Which of the following is true?

(a) Tarun is Divya's maternal uncle.
(b) Vijay is the son of Manisha
(c) Gauri is Harish's mother-in-law
(d) Nishi is the cousin of Karuna

10. How is Karuna related to Divya?

(a) Aunt (b) Sister-in-law
(c) Mother (d) Sister

11. What is the relationship between Vijay and Nishi?

(a) Cousins (b) Husband-Wife
(c) Father-Daughter (d) None of these

12. Parikshit is the member of which generation?

(a) 4th (b) 1st
(c) 2nd (d) 3rd

Directions (Q. Nos. 13-17) Read the following information carefully to answer the questions given below.

I. There are six members in a family.
II. The members are A, B, C, D, E and F.
III. D is the daughter of F who is the mother of E.
IV. E is the daughter of A.
V. A is the son of C.
VI. The family consists of one couple who has their parents and their children.

13. What relationship do D and E bear to each other?
(a) Mother and son
(b) Sister and brother
(c) Sisters
(d) Grandmother and granddaughter

14. Who are the male members in the family?
(a) A, B and D
(b) C and F
(c) A and C
(d) Cannot be determined

15. Which of the following pairs is the parents of the children?
(a) BF
(b) CF
(c) BC
(d) None of these

16. How many female members are there in the family?
(a) 4
(b) 3
(c) 2
(d) None of these

17. Which of the following pairs is the parents of the couple?
(a) CF (b) AF (c) BC (d) AB

18. 'A + B' means that A is the father of B, 'A – B' means that A is the wife of B 'A × B' means that A is the brother of B, and 'A ÷ B' means that A is the daughter of B. If 'S ÷ T × U + Z', which of the following is true?
(a) S is the daughter of Z
(b) Z is the aunt of S
(c) S is the aunt of Z
(d) None of these

19. If S – T + Z, then which of the following statements is true? (condition will be as same as Q. No. 38)
(a) S is the mother of Z
(b) Z is the wife of S
(c) S is the aunt of Z
(d) S is the sister of Z

Directions (Q. Nos. 20-22) Read the following information carefully and answer the questions given below.

'P + Q' means that P is the son of Q, 'P – Q' means that P is the wife of Q, 'P × Q' means that P is the brother of Q, 'P ÷ Q' means that P is the mother of Q and 'P = Q' means that P is the sister of Q.

20. Then, what does 'X + Y + Z' mean?
(a) Z is the father of Y
(b) Z is the son of Y
(c) Z is the uncle of Y
(d) Z is the brother of Y

21. If A + B – C is given, Which statement is true?
(a) C is the father of A
(b) C is the son of A
(c) C is the uncle of A
(d) C is the brother of A

22. If A × B ÷ C given, which of the following statement is true?
(a) A is the brother of C
(b) A is the father of C
(c) A is the maternal uncle of C
(d) A is the nephew of C

Directions (Q. Nos. 23-24) 'A + B' means that A is the father of B, 'A – B' means that A is the wife of B, 'A × B' means that A is the brother of B, 'A ÷ B' means that A is the mother of B and 'A = B' means that A is the sister of B. On the basis of this information.

23. What does 'P + Q – R' means?
(a) P is the father-in-law of R
(b) P is the son of R
(c) P is the uncle of R
(d) P is the brother of R

24. What does 'P × Q ÷ R' means?
(a) P is the brother of Q
(b) P is the father of R
(c) P is the maternal uncle of R
(d) P is the nephew of R

Directions (Q. Nos. 25-29) Read the information carefully and answer the following questions.

[SBI (PO) 2013]

If 'A + B' means A is the father of B.
If 'A × B' means A is the sister or B.
If '$A \$ B$' means A is the wife of B.
If 'A % B' means A is the mother of B.
If 'A ÷ B' means A is the son of B.

25. What should come in place of the question mark, to establish that J is the brother of T in the expression?

J ÷ P % H ? T % L

(a) ×
(b) ÷
(c) $\$$
(d) Either + or X
(e) None of these

26. Which among the given expressions indicate that M is the daughter of D
(a) $L \% R \$ D + T \times M$
(b) $L + R \$ D + M \times T$
(c) L % R % D + T ÷ M
(d) $L \$ D \div R \% M \div T$
(e) None of these

27. Which among the following options is true, if the expression 'I + T % J × L ÷ K' is definitely true?
(a) L is the daughter of T
(b) K is the son-in-law of I
(c) I is the grandmother of L
(d) J is the brother of L
(e) None of these

28. Which among the following expressions is true, if Y is the son of X is definitely false?
(a) W % L × T × Y ÷ X
(b) W + L × T × Y ÷ X
(c) X + L × T × Y ÷ W
(d) $W \$ X + L + Y + T$
(e) W % X + T × Y ÷ L

29. What should come in place of the question mark, to establish that T is the sister-in-law of Q in the expression

R % T × P ? Q + V

(a) +
(b) %
(c) ×
(d) $\$$
(e) Either $\$$ or ×

30. Pinky, who is Victor's daughter, say to Lucy, "Your mother Rosy is the younger sister of may father, who is the third child of Joseph". How is Joseph related to Lucy? **[CLAT 2014]**

(a) Father-in-law (b) Father
(c) Maternal uncle (d) Grandfather

31. Sohan said to Mohan, "This girl is the wife of the grandson of my mother". How is Sohan related to this girl? **[MAT 2013]**

(a) Grandfather (b) Father
(c) Husband (d) Father-in-law

32. P's father is Q's son. M is the paternal uncle of P and N is the brother of Q. How is M related to N? **[CMAT 2013]**

(a) Nephew (b) Cousin
(c) Data inadequate (d) None of these

33. Kamal told Vimal, " Yesterday I defeated the only brother of the daughter of my grandmother." Whom did Kamal defeated? **[NIFT (UG) 2013]**

(a) Father (b) Son
(c) Brother (d) Father-in-law

34. A and B are brothers, C and D are sisters. A's son is D's brother, then how is B related to C? **[NIFT (PG) 2014, SSC (Multitasking) 2013]**

(a) Father (b) Brother
(c) Grandfather (d) Uncle

35. Introducing Shyam, a lady said, 'The father of his father-in-law is my father-in-law'. How is Shyam related to the lady? **[NIFT (PG) 2013]**

(a) Son (b) Husband
(c) Son-in-law (d) Father

36. D is the son- in-law of B, who is the brother-in-law of A, who is the brother of C. How is A related to B? **[CMAT 2013]**

(a) Father (b) Son
(c) Data inadequate (d) None of these

37. Pointing to a lady, Chouhan said, 'She is the only daughter of my father-in-law's wife. How is this lady related to Chouhan? **[MAT 2013]**

(a) Mother (b) Wife
(c) Cousin (d) Sister

38. Pointing to a lady, Rishi said, 'This son of her brother is the brother of my wife'. How is this lady related to Rishi? **[MAT 2013]**

(a) Mother-in-law
(b) Mother's sister
(c) Sister of father-in-law
(d) None of the above

39. '$S \times T$' means that S is the mother of T, '$S + T$ means that S is the father of T, '$S - T$' means that S is the sister of T. On the basis of this information, you have to select the option which shows that A is the grandfather of T? **[CMAT 2013]**

(a) $A + S + B - T$ (b) $A \times B + C - T$
(c) $A + B - C \times T$ (d) $A - C + B \times T$

40. Pointing towards a Boy Veena said "He is the son of only son of my grandfather". How is that boy related to Veena? **[NIFT (UG) 2013]**

(a) Uncle (b) Brother
(c) Cousin (d) Data inadequate

41. P is the only son of Q who is the only daughter of S. D is the mother of B and daughter-in-law of Q. How is B related to Q? **[CMAT 2013]**

(a) Grandson (b) Granddaughter
(c) Son (d) Cannot be determined

42. P's father is 'Q's son. M is the paternal uncle of P and N is the brother of Q. How is N related to M? **[NIFT (UG) 2012]**

(a) Brother (b) Nephew
(c) Cousin (d) None of these

43. Daya has brother, Anil, Daya is the son of Chandra. Bimal is Chandra's father. In terms of relationship, what is Anil of Bimal? **[NIFT (UG) 2012]**

(a) Son (b) Grandson
(c) Brother (d) Grandfather

Directions (Q. Nos. 44-46) Read the following information carefully to answer the questions that follow **[MAT 2013]**

A family consists of six members P, Q, R, X, Y and Z. Q is the son of R but R is not the mother of Q. P and R are married couple. Y is the brother of R. X is the daughter of P and Z is the brother of P.

44. Who is the brother-in-law of R?

(a) P (b) Z (c) Y (d) X

45. How many female members are there in the family?

(a) One (b) Two (c) Three (d) Four

46. Which of these is a pair of brothers?

(a) P and X (b) P and Z
(c) Q and X (d) R and Y

47. Mohan is the Son of Arun's father's sister. Prakash is the son of Reva, who is the mother of Vikas and grandmother of Arun. Pranab is the father of Neela and the grandfather of Mohan. Reva is the wife of Pranab. How is the wife of Vikas related to the lady? **[NIFT (PG) 2013]**

(a) Sister (b) Sister-in-law
(c) Niece (d) None of these

48. There are six members in a family. A is the father of D, E is the grandfather of D. B is the daughter-in-law of C. F is the uncle of D. what is the relationship of C with F? **[MAT 2013]**

(a) Sister (b) Mother-in-law
(c) Mother (d) Data inadequate

49. T, S and R are three brothers. T's son Q is married to K and they have one child Rahul blessed to them. M the son of S is married to H and this couple is blessed with a daughter Madhvi. R has a daughter N who is married to P. This couple has one daughter Karuna born to them. How is Madhvi related toS ? **[MAT 2013]**

(a) Daughter (b) Niece
(c) Granddaughter (d) None of these

50. Pointing to a man on the stage, Rita said, "He is the brother of the daughter of the wife of my husband". How is the man on the stage related to Rita? **[MAT 2013]**

(a) Son (b) Husband
(c) Cousin (d) Nephew

51. Deepak said to Nitin, "That boy playing with the football is the younger of the two brothers of the daughter of my father's wife". How is the boy playing football related to Deepak? **[CLAT 2013]**

(a) Son (b) Brother
(c) Cousin (d) Brother-in-law

52. Anil introduced Rohit as the son of the only brother of his father's wife. How is Rohit related to Anil? **[NIFT (UG) 2014]**

(a) Cousin (b) Son
(c) Uncle (d) Son-in-law

Directions (Q. Nos. 53-56) Read the following information carefully to answer the questions that follow.

There are six children taking part in an essay competition, namely A, B, C, D, E and F. A and E are brothers. F and D are the sisters of E. C is the only son of A's uncle. B and D are the daughters of the brother of C's father. **[MAT 2013]**

53. How is D related to A?

(a) Uncle (b) Sister (c) Niece (d) Cousin

54. How many male competitors are there?

(a) 6 (b) 5 (c) 4 (d) 3

55. How many female competitors are there?

(a) 5 (b) 4 (c) 3 (d) 2

56. How is C related to F?

(a) Cousin (b) Brother (c) Son (d) Uncle

57. Introducing Amrita, Raj said, "Her mother is the only daughter of my mother-in law". How is Raj related to Amrita? **[CMAT 2014]**

(a) Husband (b) Father (c) Wife (d) Uncle

58. Z is maternal uncle of Y, X is maternal grandfather of Z. S is grandson of X. How is S related to Y? **[CMAT 2013]**

(a) Maternal grandfather (b) Maternal uncle
(c) Cousin brother (d) None of these

59. Arti and Saurabh are the children of Mr and Mrs Shah. Ritu and Shaki are the children of Mr and Mrs Mehra. Saurabh and Ritu are married to each other and two daughter Mukti and Shruti are born to them. Shakti is married to Rina and two children Subhash and Reshma are born to them. How is Arti related to Shruti? **[MAT 2014]**

(a) Mother (b) Mother-in-Law
(c) Sister (d) Aunt

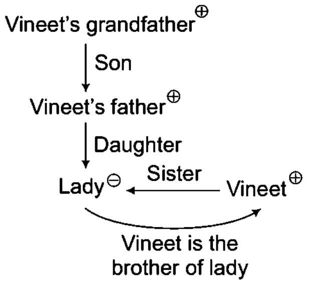
60. In a family, there are seven persons, comprising two married couples, T is the son of M and the grandson of K. M is a widower. M and R are brothers and W is the daughter-in-law of J, who is the mother of R and the grandmother of 'D'. How is D related to M? **[MAT 2013]**

(a) Son
(b) Son-in-law
(c) Nephew or niece
(d) Brother

Response & Interpretations (Master Exercise)

1. (*c*) Clearly, A is a male and B is a female. Now, B has as many sisters as brothers. So, B has one sister. Hence, there are one brother and two sisters in this family.

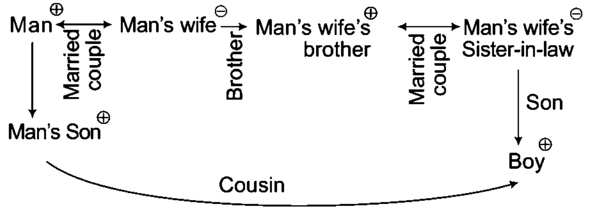
2. (*a*) Let us draw the family diagram



Vineet's grandfather ⊕
Son
Vineet's father ⊕
Daughter
Lady ⊖
Sister
Vineet ⊕
Vineet is the brother of lady

Clearly, the only son of Vineet's grandfather is the father of Vineet and daughter of Vineet's father is the sister of Vineet. Hence, Vineet is the brother of that lady.

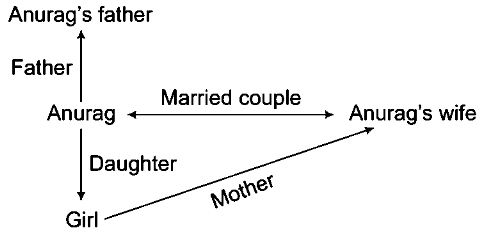
3. (*a*) Let us draw the family diagram



Man ⊕
Married couple
Man's wife ⊖
Brother
Man's wife's brother ⊕
Married couple
Man's wife's Sister-in-law ⊖
Son
Man's Son ⊕
Boy ⊕
Cousin

Hence, man's son is the cousin of that boy.

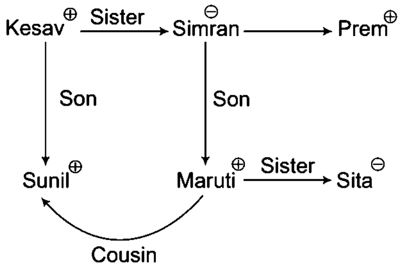
4. (*d*) Let us draw the family tree



Anurag's father
Father
Anurag
Married couple
Anurag's wife
Daughter
Girl
Mother

The daughter of only child of Anurag's father will be daughter of Anurag. Thus, Anurag's wife will be the mother of this girl.

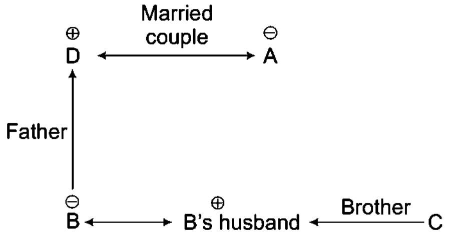
5. (*a*) Let us draw the family diagram



Kesav ⊕
Sister
Simran ⊖
Prem ⊕
Son
Son
Sunil ⊕
Maruti ⊕
Sister
Sita ⊖
Cousin

From above family diagram, Sunil is cousin of Maruti.

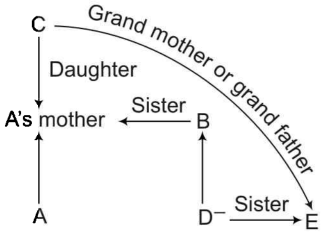
6. (*a*) Let us draw the family diagram



Married couple
⊕ D
⊖ A
Father
⊖ B
⊕ B's husband
Brother
C

Clearly, A is D's wife.

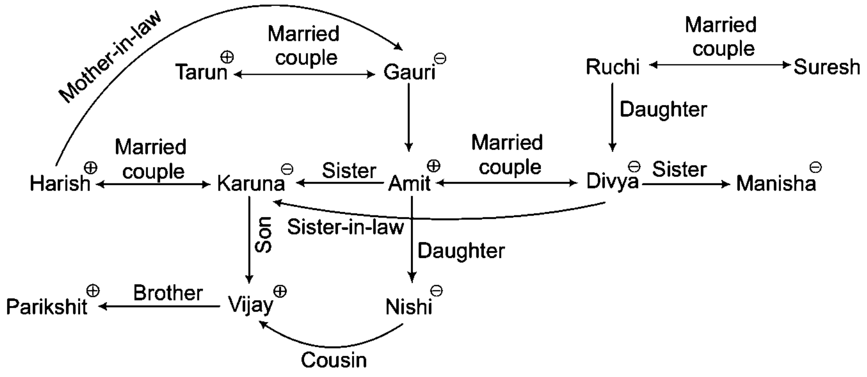
7. (*d*) Let us draw the family diagram



C
Grand mother or grand father
Daughter
A's mother
Sister
B
A
D−
Sister
E

Now, it can be concluded that C is either grandmother or grandfather of E.

Solutions (Q. Nos. 8 - 12) *Let us see the family diagram*



Mother-in-law
Tarun ⊕
Married couple
Gauri ⊖
Ruchi
Married couple
Suresh
Daughter
Harish ⊕
Married couple
Karuna ⊖
Sister
Amit ⊕
Married couple
Divya ⊖
Sister
Manisha ⊖
Son
Sister-in-law
Daughter
Parikshit ⊕
Brother
Vijay ⊕
Nishi ⊖
Cousin

8. (*b*) Number of females in the 2nd generation = 3 (Karuna, Divya and Manisha)

Number of males in the 2nd generation = 2 (Harish and Amit)

∴ Required difference = 3 – 2 = 1

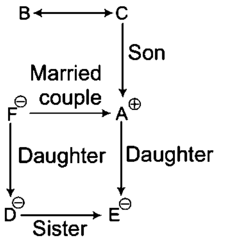
9. (*c*) Gauri is Harish's mother-in-law.

10. (*b*) Karuna is Divya's sister-in-law.

11. (*a*) Vijaya and Nishi are cousins.

12. (*d*) Parikshit is the member of 3rd generation.

Solutions (Q. Nos. 13- 17) *Let us make the family diagram*


B
C
Son
Married couple
F⊖
A⊕
Daughter
Daughter
D⊖
E⊖
Sister

13. (*c*) D and E are sisters.

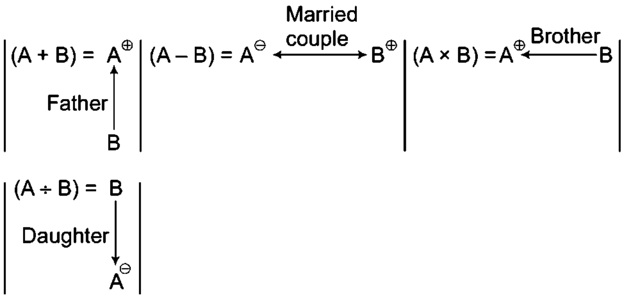
14. (*d*) As gender of B and C is not known.

15. (*d*) As parents of children (D and E) are A and F.

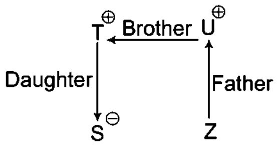
16. (*a*) Female members are D, E,F and either B or C.

17. (*c*) B and C are the parents of couple.

18. (*d*) By decoding given information with symbols of family diagram, we get

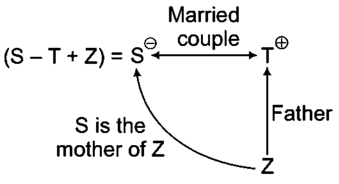

(A + B) = A⊕
Father
B
(A – B) = A⊖
Married couple
B⊕
(A × B) = A⊕
Brother
B
(A ÷ B) = B
Daughter
A⊖

Now, (S ÷ T × U + Z) =


T⊕
Brother
U⊕
Daughter
Father
S⊖
Z

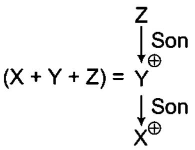
Clearly, S and Z are cousins.

19. (*a*)


(S – T + Z) = S⊖
Married couple
T⊕
S is the mother of Z
Father
Z

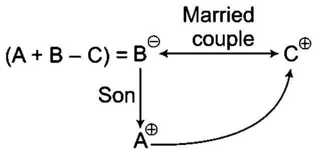
Hence, S is the mother of Z.

20. (*a*)


Z
Son
(X + Y + Z) = Y⊕
Son
X⊕

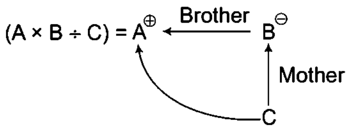
Hence, Z is the father of Y.

21. (*a*)


Married couple
(A + B – C) = B⊖
C⊕
Son
A⊕

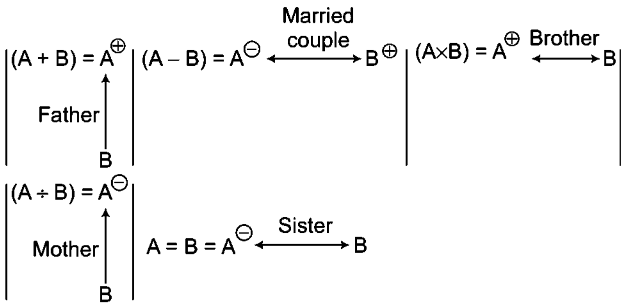
Hence, C is the father of A.

22. (*c*)

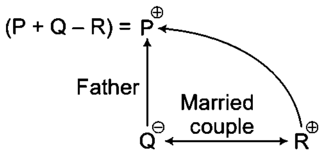

(A × B ÷ C) = A⊕
Brother
B⊖
Mother
C

Hence, A is the maternal uncle of C.

Solutions (Q. Nos. 23-24) *By decoding the given information with symbols of family diagram, we get*

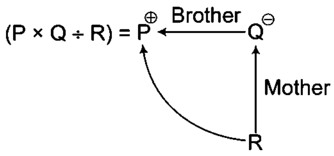

(A + B) = A⊕
Father
B
(A – B) = A⊖
Married couple
B⊕
(A×B) = A⊕
Brother
B
(A ÷ B) = A⊖
Mother
B
A = B = A⊖
Sister
B

23. (*a*)


(P + Q – R) = P⊕
Father
Married couple
Q⊖
R⊕

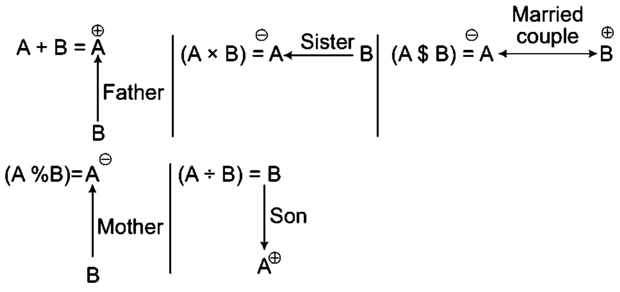
Hence, P is the father-in-law of R.

24. (*c*)


(P × Q ÷ R) = P⊕
Brother
Q⊖
Mother
R

Hence, P is the maternal uncle of R.

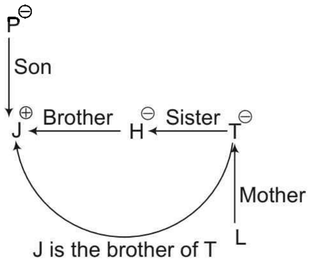
Solutions (Q. Nos. 25-29) *By decoding given information with symbols of family diagram, we get*


A + B = A⊕
Father
B
(A × B) = A⊖
Sister
B
(A $ B) = A⊖
Married couple
B⊕
(A %B)=A⊖
Mother
B
(A ÷ B) = B
Son
A⊕

25. (*a*) Let us check all the options one by one for the required relationship.

From option (a),

$J \div P \% H \times T \% L$ = selected

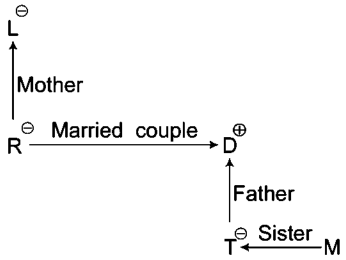

P⊖
Son
J⊕
Brother
H⊖
Sister
T⊖
Mother
L
J is the brother of T

Clearly, from option (a) it is established that J is the brother of T. So, there is no need to check other options.

26. (*b*) Let us check all the options one by one for the required relationship.

From option (a),

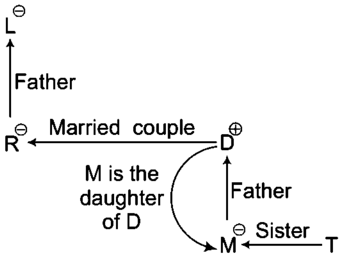
$L \% R \$ D + T \times M$ = Rejected


L⊖
Mother
R⊖
Married couple
D⊕
Father
T⊖
Sister
M

As gender of M is not Known, so M can either be daughter or son of D.

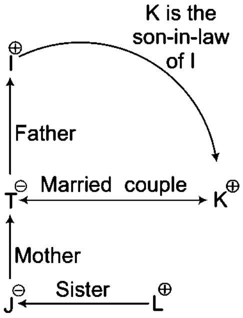
From option (b),

$L + R \$ D + M \times T$ = Selected


L⊖
Father
R⊖
Married couple
D⊕
M is the daughter of D
Father
M⊖
Sister
T

It is clear from option (b) that M is the daughter of D. So, there is no need to check other options.

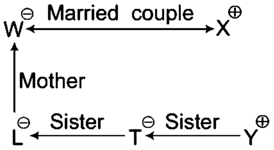
27. (*b*) $I + T \% J \times L \div K$ =


K is the son-in-law of I
I⊕
Father
T⊖
Married couple
K⊕
Mother
J⊖
Sister
L⊕

Clearly, K is the son-in-law of I.

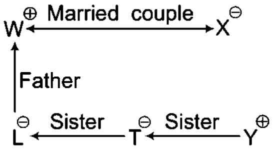
28. (*d*) Let us check all the options one by one for the required relationship.

From option (a), $W \% L \times T \times Y \div X$ = Rejected


W⊖
Married couple
X⊕
Mother
L⊖
Sister
T⊖
Sister
Y⊕

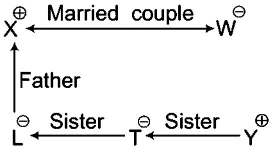
Option (a) is rejected, as it is given that Y cannot be the son of X.

From option (b), $W + L \times T \times Y \div X$ = Rejected


W⊕
Married couple
X⊖
Father
L⊖
Sister
T⊖
Sister
Y⊕

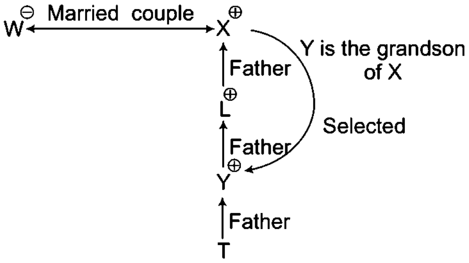
Option (b) is rejected, as it is given that Y cannot be the son of X.

From option (c), $X + L \times T \times Y \div W$ = Rejected


X⊕
Married couple
W⊖
Father
L⊖
Sister
T⊖
Sister
Y⊕

Option (c) is rejected, as it is given that Y cannot be the son of X.

From option (d), $W \$ X + L + Y + T$ = Selected

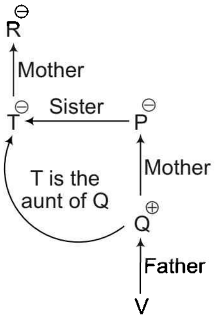

W⊖
Married couple
X⊕
Y is the grandson of X
Father
L⊕
Selected
Father
Y⊕
Father
T

Option (d) is selected as it holds that Y is not the son of X but he is the grandson of X.

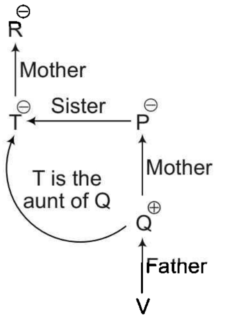
Hence, there is no need to check other options.

29. (*d*) Let us check all the options one by one for the required relationship.

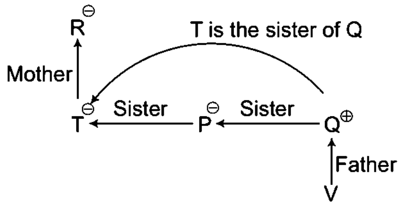
From option (a), $R \% T \times P + Q + V$ = Rejected


R⊖
Mother
T⊖
Sister
P⊖
T is the aunt of Q
Mother
Q⊕
Father
V

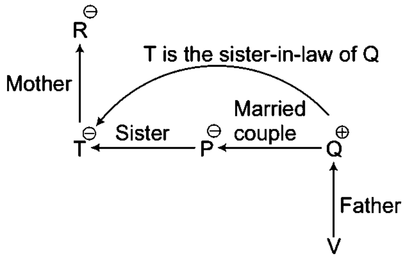
From option (b), R % T × P % Q + V = Rejected


R ⊖
Mother
T ⊖
Sister
P ⊖
T is the aunt of Q
Mother
Q ⊕
Father
V

From option (c), R % T × P × Q × V = Rejected

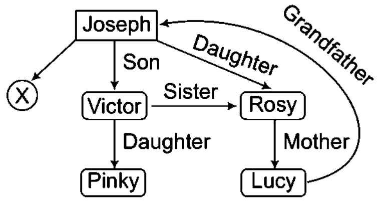

R ⊖
Mother
T is the sister of Q
T ⊖
Sister
P ⊖
Sister
Q ⊕
Father
V

From option (d), R % T × P $ Q + V = Selected


R ⊖
Mother
T is the sister-in-law of Q
T ⊖
Sister
P ⊖
Married couple
Q ⊕
Father
V

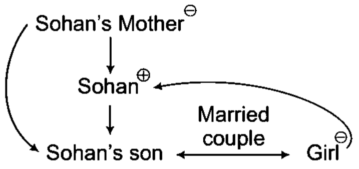
It is clear from option (d) that T is the sister-in-law of Q. So, there is no need to check other options.

30. (*a*) According to the given information, we make a relations tree


Joseph
Grandfather
Daughter
Son
X
Victor
Sister
Rosy
Daughter
Mother
Pinky
Lucy

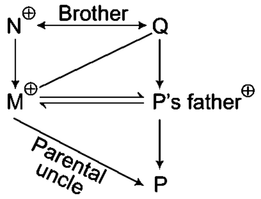
Joseph has three children, one is X, second is Victor and third is Rosy.
Here, it is not clear 'X' is male or female.
Rosy is the mother of Lucy.
So, Joseph is the grandfather of Lucy.

31. (*d*) Let us draw the family diagram


Sohan's Mother ⊖
Sohan ⊕
Married couple
Sohan's son
Girl ⊖

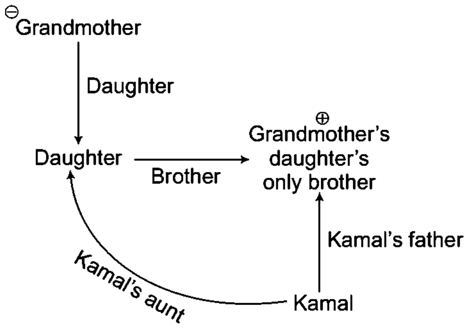
So, Sohan is father-in-law of that girl.

32. (*a*) M ⇒ Paternal uncle of P
N ⇒ Brother of Q
P's father ⇒ Q's son


N ⊕
Brother
Q
M ⊕
P's father ⊕
Parental uncle
P

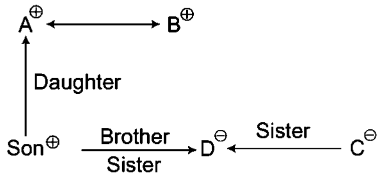
Clearly, N is brother of Q and M is brother of P's father who is Q's son.
So, M is nephew of N.

33. (*a*) Let us draw the family diagram


⊖ Grandmother
Daughter
Daughter
Brother
⊕ Grandmother's daughter's only brother
Kamal's father
Kamal's aunt
Kamal

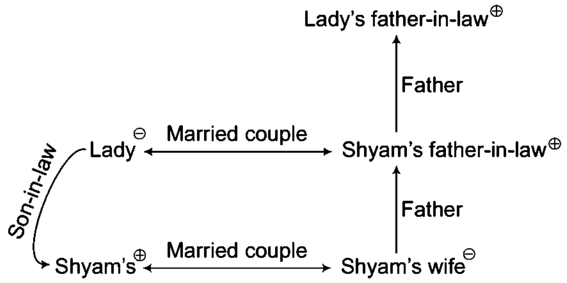
Hence, Kamal has defeated his father.

34. (*d*) A and B are brothers.
C and D are sisters.
A's son is D's brother


A ⊕
B ⊕
Daughter
Son ⊕
Brother
Sister
D ⊖
Sister
C ⊖

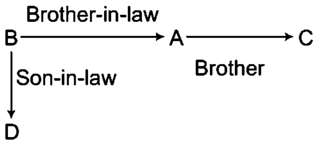
(since, '+' indicates male and – indicates female)
Hence, B is the uncle of C.

35. (*c*) Let us draw the family diagram


Lady's father-in-law ⊕
Father
Lady ⊖
Married couple
Shyam's father-in-law ⊕
Son-in-law
Father
Shyam's ⊕
Married couple
Shyam's wife ⊖

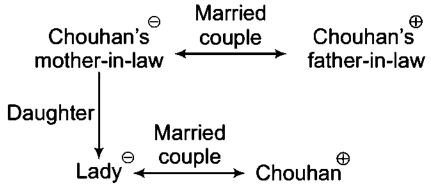
Clearly, Shyam is the son-in-law of that lady.

36. (*d*)


Brother-in-law
B
A
C
Son-in-law
Brother
D

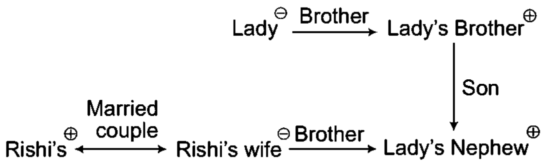
Brother of C ⇒ A
Brother-in-law of A ⇒ B (∵ A is male)
Clearly, A is also the brother-in-law of B.

37. (*b*) Let us draw s family diagram


Chouhan's mother-in-law ⊖
Married couple
Chouhan's father-in-law ⊕
Daughter
Lady ⊖
Married couple
Chouhan ⊕

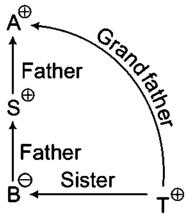
So, lady is wife of Chouhan.

38. (*c*) Let us draw the family diagram


Lady ⊖
Brother
Lady's Brother ⊕
Son
Married couple
Rishi's ⊕
Rishi's wife ⊖
Brother
Lady's Nephew ⊕

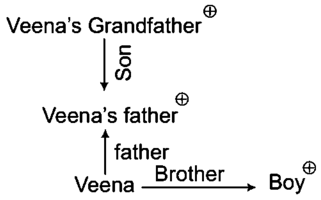
So, the lady is sister of Rishi's father-in-law.

39. (*a*) By using option (a) *i.e.*, A + S + B – T


A ⊕
Grandfather
Father
S ⊕
Father
B ⊖
Sister
T ⊕

Now, from the diagram it is clear that A is grandfather of T

40. (*b*) Let us draw the family diagram


Veena's Grandfather ⊕
Son
Veena's father ⊕
father
Veena
Brother
Boy ⊕

So, boy is the brother of Veena.

41. (*d*) Only son of Q ⇒ P

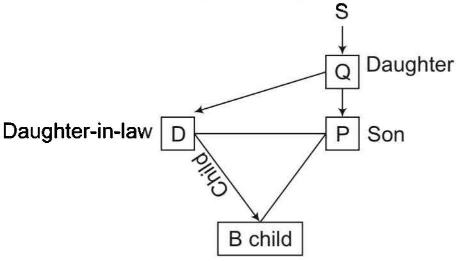
Only daughter of S ⇒ Q

D ⇒ B's mother

D ⇒ Q' daughter in-law

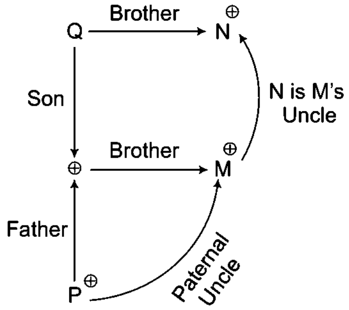
Q ⇒ B's grandmother

B ⇒ Q's grandson or granddaughter


S
Q
Daughter
Daughter-in-law
D
P
Son
Child
B child

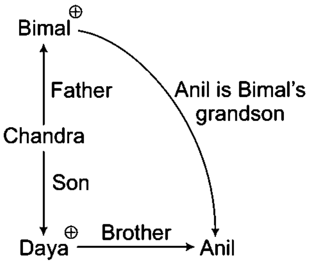
Clearly, the relationship cannot be determined because the gender of B is not clear.

42. (*d*) Let us draw the family diagram


Q
Brother
N ⊕
N is M's Uncle
Son
⊕
Brother
M ⊕
Father
P ⊕
Paternal Uncle

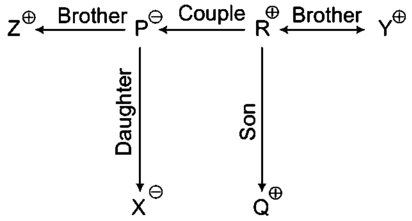
As, N is M's uncle, none of the options is correct.

43. (*b*) Let us draw the family diagram


Bimal ⊕
Father
Anil is Bimal's grandson
Chandra
Son
Daya ⊕
Brother
Anil

So, Anil is Bimal's grandson.

Solutions (Q. Nos. 44-46) *From the information given data is arranged as*

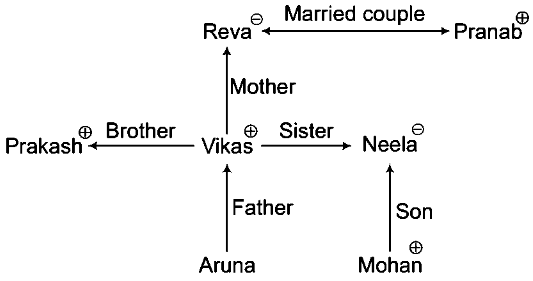

Z ⊕
Brother
P ⊖
Couple
R ⊕
Brother
Y ⊕
Daughter
Son
X ⊖
Q ⊕

44. (*b*) Z is brother-in-law of R.

45. (*b*) X and P are females.

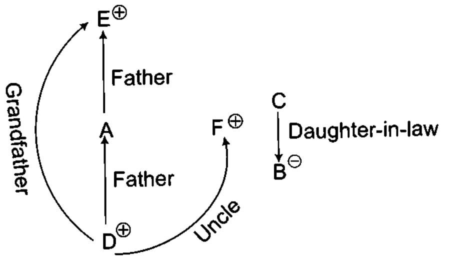
46. (*d*) R and Y is the pair of brothers.

47. (*b*) Let us draw the family diagram

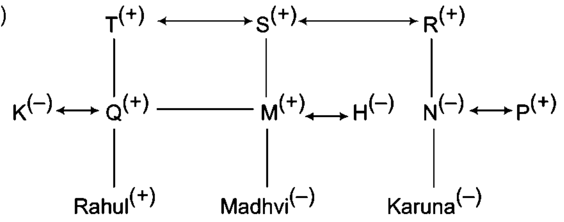

Reva ⊖
Married couple
Pranab ⊕
Mother
Prakash ⊕
Brother
Vikas ⊕
Sister
Neela ⊖
Father
Son
Aruna
Mohan ⊕

As, Vikas is Neela's brother, Vikas wife will be Neela's sister-in-law.

48. (*d*) Cannot be determined, since the relation of B and C is not given with other family members. Hence, data is inadequate.


E⊕
Father
A
Father
D⊕
Grandfather
F⊕
Uncle
C
Daughter-in-law
B⊖

49. (*c*)


T(+)
S(+)
R(+)
K(–)
Q(+)
M(+)
H(–)
N(–)
P(+)
Rahul(+)
Madhvi(–)
Karuna(–)

Here, (+) → Male members

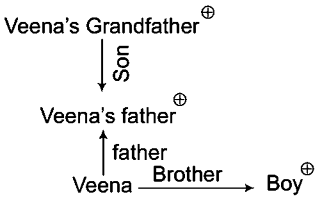
(–) → Female member

⟷ → Couples

From the above generation tree, we see that Madhvi is the granddaughter of S.

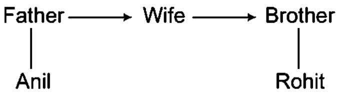
50. (*a*) Brother of daughter means son. Wife of my husband means herself. So, the man is son of Rita.

51. (*b*)


Veena's Grandfather⊕
Son
Veena's father⊕
father
Veena
Brother
Boy⊕

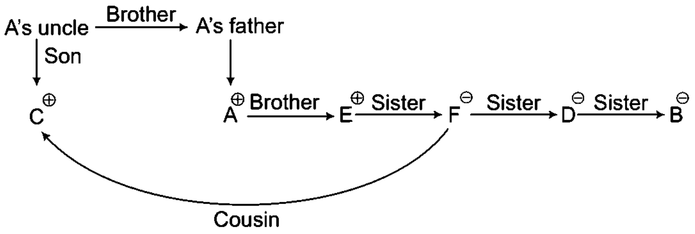
So, the boy is brother of Deepak.

52. (*a*)


Father
Wife
Brother
Anil
Rohit

From the above figure, it is clear that Anil and Rohit are the cousins.

Solutions (Q. Nos. 53-56) *Let us draw the family diagram*


A's uncle
Brother
A's father
Son
C⊕
A⊕
Brother
E⊕
Sister
F⊖
Sister
D⊖
Sister
B⊖
Cousin

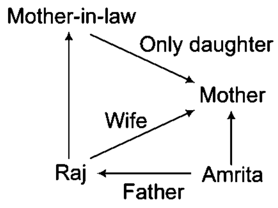
53. (*b*) D is A's sister.

54. (*d*) Males are A, E and C.

55. (*c*) Females are B, D and F.

56. (*a*) C is the cousin of F.

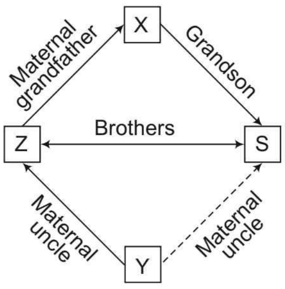
57. (*b*) On the basis of given information the relation is as below


Mother-in-law
Only daughter
Mother
Wife
Raj
Father
Amrita

It is clear from above figure that Raj is the father of Amrita.

58. (*b*) X ⇒ Maternal grandfather of Z

S ⇒ Grandson of X

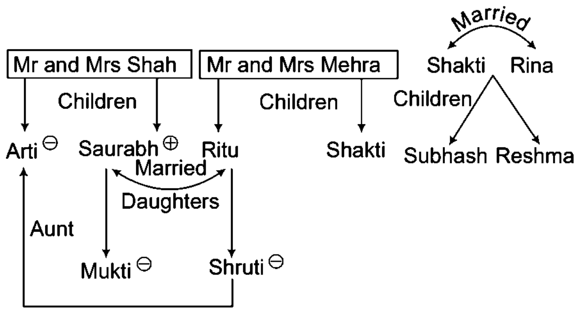

X
Maternal grandfather
Grandson
Z
Brothers
S
Maternal uncle
Maternal uncle
Y

So, Z and S are brothers.

∵ Z ⇒ Maternal uncle of Y.

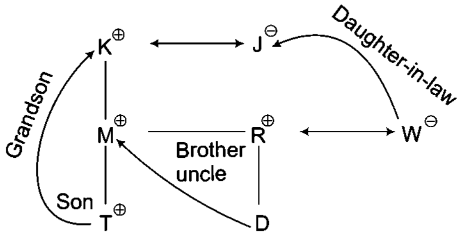
Clearly, S is also the maternal uncle of Y..

59. (*d*)


Married
Mr and Mrs Shah
Mr and Mrs Mehra
Shakti
Rina
Children
Children
Children
Arti⊖
Saurabh⊕
Ritu
Shakti
Subhash
Reshma
Married
Daughters
Aunt
Mukti⊖
Shruti⊖

From the above diagram, it is clearly shown that Arti is aunt of Shruti. Hence, option (d) is the correct answer.

60. (*c*)


K⊕
J⊖
Daughter-in-law
Grandson
M⊕
Brother uncle
R⊕
W⊖
Son
T⊕
D

⊕ → Male member

⊖ → Female member

⟷ → Married couples

From the above generation true we see that M is uncle of D or D is nephew or niece of M because the gender of D is not clear.

12

Clocks

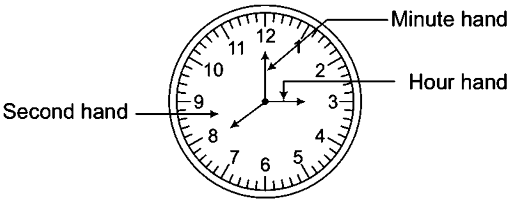
A Clock is an instrument used for indicating and maintaining the time. It is an electronic device that presents the duration of hour, minute and second.

Different types of questions covered in this chapter are as follows

- Angle Between the Hands of Clock
- Faulty Clocks
- Position of Hands of Clock
- Time Gained or Lost by Clock

The face or dial of a clock is divided along the circumference into 12 equal spaces called hour spaces and 60 equal spaces called minute spaces. The clock has two hands. The larger one is called minute hand which gives minutes and smaller one is called hour hand which gives hour.

The basic structure of a clock is as follows



The clock represents two things *i.e.,* minute and hour. The **minute** is a unit of time equal to $\frac{1}{60}$th of an hour or 60 s *i.e.,* 1 min = 60 s.

An **hour** is a unit of measurement for the time duration of 60 min or 3600 s.

i.e., 1 h = 60 min= 3600 s

Relative Movement of Hands of Clock

Clocks follow the principle of relative speed. Both hands move in the same direction *i.e.,* (clockwise direction). The minute hand moves around the whole circumference of the clock once in 1h. The hour hand moves around the whole circumference of the clock once in 12 h. Thus, the minute hand is twelve times faster than the hour hand.

The distance between two consecutive number in the clock is equal to 5 min.

In an hour, the hour hand crosses 5 min spaces while the minute hand crosses 60 min spaces.

$\therefore$ In 60 min, the minute hand gains (60 – 5) = 55 min over hour hand

$\therefore$ 1 min is gained by minute hand over hour hand in $\frac{60}{55} = \frac{12}{11}$ min.

Several types of questions based on clock are asked in various competitive exams. Based on the diversity of questions asked, we have classified them into following types

Type 1 Angle Between the Hands of Clock

In this type of questions, a particular time is given and the candidate is required to find out the angle between the hour hand and the minute hand at that particular time. For solving these type of questions, a candidate is required to have a basic knowledge about the angles traced by the different hands in a clock.

The circumference of the dial of a clock is equal to 360°. In other words, we can say that when minute hand, moving clockwise, starts from 12 and again reaches at 12, then it completes one round which is equal to 360°.

The angle between two consecutive digits/numbers of a clock is 30°.

When minute hand completes one round, then it crosses 60 min spaces of dial.

It means

$$60 \text{ min spaces} = 360^\circ$$

$$\therefore \quad 1 \text{ min space} = \frac{360^\circ}{60} = 6^\circ$$

Clearly, minute hand traces an angle of 6° in 1 min.

When hour hand completes a round, then it crosses 12 h spaces of dial.

$$12 \text{ h} = 360^\circ \quad \Rightarrow \quad 1 \text{ h} = \frac{360^\circ}{12} = 30^\circ$$

Hour hand traces an angle of 30° in 1 h

$$1 \text{ h} = 30^\circ \quad \Rightarrow \quad 60 \text{ min} = 30^\circ \quad \Rightarrow \quad 1 \text{ min} = \frac{30^\circ}{60^\circ} = \left(\frac{1}{2}\right)^\circ$$

Clearly, hour hand traces an angle of $\left(\frac{1}{2}\right)^\circ$ in 1 min.

Thus, angle traced per minute by

(i) Second hand = 360° (ii) Minute hand = 6° (iii) Hour hand = $\left(\frac{1}{2}\right)^\circ$

***Ex* 1** When the minute hand covers a distance of 1 h 20 min, then what is the angular distance covered by it?

(a) 310° (b) 192° (c) 480° (d) 420°

Sol. (c) Total minute spaces = 1 h + 20 min = 60 min + 20 min = 80 min

1 min space = 6°

$\therefore$ 80 min spaces = 80 × 6° = 480°

The relative speed of the minute hand with respect to hour hand is $5\frac{1}{2}^\circ$ per min and at any time, they make an angle between 0° and 180° with each other. Whenever you get answer in decimals, then remember that the base is 60.

***Ex* 2** What is the angle traced by hour hand in15 min?

(a) 7.5° (b) 8° (c) 6.5° (d) 5°

Sol. (a) $\because$ Angle traced by hour hand in 1 min = $\left(\frac{1}{2}\right)^\circ$

$\therefore$ Angle traced by hour hand in 15 min = $15 \times \frac{1^\circ}{2} = 7.5^\circ$

***Ex* 3** What will be angle between the two hands of a clock when the time is 8 : 50?

(a) 65° (b) 30° (c) 55° (d) 35°

Sol. (*d*) Method I

$\because$ Angle traced by the hour hand in 12 h = 360°

So, angle traced by the hour hand in 8 h 50 min *i.e.*, $\frac{53}{6}$ h $= \left(\frac{360}{12} \times \frac{53}{6}\right)^{\circ} = 265^{\circ}$

$\therefore$ Angle traced by the minute hand in 60 min = 360°

$\therefore$ Angle traced by minute hand in 50 min $= \frac{360^{\circ}}{60} \times 50 = 300^{\circ}$

$\therefore$ Required angle = (300° − 265°) = 35°

Method II

In the given question, hour hand is behind the minute hand. Also, given, $n = 8$, $x = 50$

Then, according to the formula,

$$\therefore \text{ Required angle} = \left\{30\left(\frac{x}{5} - n\right) - \frac{x}{2}\right\}^{\circ} \Rightarrow \left\{30\left(\frac{50}{5} - 8\right) - \frac{50}{2}\right\}^{\circ} \Rightarrow (30 \times 2 - 25)^{\circ} = 35^{\circ}$$

Type 2 Position of Hands of Clock

In this type of questions, some conditions are provided and the candidate is required to find out the time (position of hands of a clock).

To solve these questions, following facts related to hour hand and minute hand must be kept in mind

1. In every hour, both the hands are at right angles two times. In this case,
   - Angle between the two hands = 90°
   - The two hands are 30 min spaces apart.
2. In every hour, the two hands are in the same straight line two times.
   (i) When both hands are coincident
   - Angle between the two hands = 0°
   - Minute spaces between the two hands = 0
   - Both hands are in the same direction.

   (ii) When both hands are opposite to each other.
   - Angle between the two hands = 180°
   - The two hands are 30 min spaces apart.
3. In every 12 h, both hands coincide 11 times.

   (between 11 and 1 O'clock there is a common position at 12 O'clock).

   $\therefore$ In 24 h, both hands coincides $\frac{11 \times 24}{12} = 22$ times.
4. In every 12 h, both hands are in opposite direction 11 times.

   (between 5 and 7 O'clock there is a common position at 6 O'clock).

   $\therefore$ In 24 h, both hands are in opposite directions $\frac{11 \times 24}{12}$ times = 22 times
5. In every 12 h, the two hands are in the same straight line 22 times

∴ In 24 h, the two hands are in the same straight line $\frac{22 \times 24}{12}$ times = 44 times

6. In every 12 h, the two hands are at right angles 22 times.

   (between 2 and 4 O'clock there is a common position at 3 O'clock and also between 8 and 10 O'clock there is a common position at 9 O'clock).

   ∴ In 24 h, both the hands are at right angles $\frac{22 \times 24}{12}$ times = 44 times

7. If both the hands of a clock start moving together from the same position, then both the hands will coincide after every $65\frac{5}{11}$ min.

K Memory *Add-ons*

Between x and $(x+1)$ O' clock, the time in a clock is $(5x \pm t)\frac{12}{11}$ min past x.

where, t = Minute spacing between the minute and hour hand.

i.e., between x and $(x+1)$ O' clock, the two hand will be t min apart at $(5x \pm t)\frac{12}{11}$ min past x.

If minute hand is ahead, then '+' sign is used and if hour hand is ahead, then '–' sign is used.

(i) For the **hands to be coincident**, put $t = 0$ *i.e.,* at $\frac{60x}{11}$ min past x, the hands of the clock coincide.

(ii) For the **hands to be at right angle**, put $t = 15$ *i.e.,* at $(5x \pm 15) \times \frac{12}{11}$ min past x, the hands of the clock will be at right angle.

(iii) For the **hands to be in opposite directions**, put $t = 30$ *i.e.,* at $(5x \pm 30) \times \frac{12}{11}$ min past x, the hands of the clock will be in opposite direction [use (+) sign, when $x < 6$ and (–) sign, when $x > 6$].

***Ex* 4** At what time between 1 O'clock and 2 O'clock will the hands of the clock be together?

(a) $4\frac{5}{11}$ min past 1 (b) $5\frac{5}{11}$ min past 1

(c) $3\frac{4}{11}$ min past 1 (d) $6\frac{5}{11}$ min past 1

Sol. (*b*) Method I

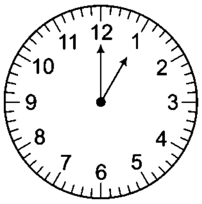
At 1 O'clock, hour hand is at 1 while minute hand is at 12. It means, the two hands are 5 min spaces apart.

To be together, minute hand will have to gain 5 min over the hour hand.

Since 55 min are gained in 60 min

∴ 5 min will be gained in $\frac{60}{55} \times 5 = \frac{60}{11}$ min or $5\frac{5}{11}$ min

Hence, the two hands will coincide at $5\frac{5}{11}$ min past 1.



1 O'clock

Method II

In the given question, $x = 1$, $(x + 1) = 2$

$$\therefore \text{ Required answer} = \frac{60x}{11} \text{ min past 1}$$

$$= \frac{60 \times 1}{11} \text{ min past 1}$$

$$= 5\frac{5}{11} \text{ min past 1}$$

***Ex* 5** **At what time between 7 O'clock and 8 O'clock, will the hands of a clock be in the same straight line but not together?**

(a) $5\frac{5}{11}$ min past 7 (b) $5\frac{4}{11}$ min past 7 (c) $6\frac{5}{11}$ min past 7 (d) $3\frac{4}{11}$ min past 7

Sol. (*a*) Method I

At 7 O'clock, minute hand is at 12 while hour hand is at 7 and both the hands are 25 min spaces apart.

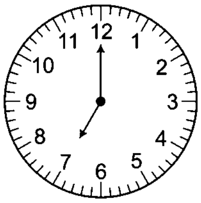
To be in the same straight line (but not together) both hands will have be 30 min spaces apart.

$\therefore$ Minute hand will have to gain $(30-25)=5$ min spaces over hour hand.

As we know, 55 min spaces are gained in 60 min.

$\therefore$ 5 min spaces will be gained in $\left(\frac{60}{55}\times 5\right)$ min $=\frac{60}{11}$ min $=5\frac{5}{11}$ min

Hence, the hands will be in the same straight line but not together at $5\frac{5}{11}$ min past 7.


7 O'clock

Method II

In the given question, $x=7,(x+1)=8, x>6$

According to the formula,

Hands will be in the same straight line at $(5x-30)\times\frac{12}{11}$ min past $x=(5\times 7-30)\times\frac{12}{11}$ min past 7

$=(35-30)\times\frac{12}{11}$ min past $7=5\times\frac{12}{11}$ min past $7=5\frac{5}{11}$ min past 7

***Ex* 6** **At what time between 3 O'clock and 4 O' clock, will the hands of a clock be 4 min apart?**

(a) $20\frac{8}{11}$ min past 3 and 12 min past 3 (b) $20\frac{8}{11}$ min past 3 and 13 min past 3

(c) $20\frac{8}{7}$ min past 3 and 12 min past 3 (d) $20\frac{8}{9}$ min past 3 and 14 min past 3

Sol. (*a*) Method I

At 3 O'clock, minute hand is 15 min spaces behind the hour hand.

Case I When the minute hand is 4 min spaces behind the hour hand.

In this case, minute hand has to gain $(15-4)=11$ min spaces over hour hand

$\because$ 55 minute are gained in 60 min,

$\therefore$ 11 min are gained in $\frac{60\times 11}{55}$ min $=12$ min

Hence, the hands will be 4 min apart at 12 min past 3.

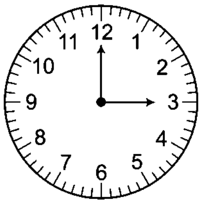
Case II When the minute hand is 4 min spaces ahead of the hour hand.

In this case, minute hand has to gain $(15+4)=19$ min spaces over hour hand

$\because$ 55 min are gained in 60 min

$\therefore$ 19 min are gained in $\left(\frac{60}{55}\times 19\right)$ min $=\left(\frac{12\times 19}{11}\right)$ min $=20\frac{8}{11}$ min

Hence, the hands will be 4 min apart at $20\frac{8}{11}$ min past 3.


3 O'clock

Method II

Given that, $x=3,(x+1)=4$ and $t=4$

Then, according to the formula, $(5x\pm t)\frac{12}{11}=(5\times 3\pm 4)\times\frac{12}{11}$ min $=(15\pm 4)\times\frac{12}{11}$ min

Separating '+' and '–' signs, we have

$(15+4)\times\frac{12}{11}$ min past 3 and $(15-4)\times\frac{12}{11}$ min past $3=\frac{19\times 12}{11}$ min past 3 and $11\times\frac{12}{11}$ min past 3

$=20\frac{8}{11}$ min past 3 and 12 min past 3

Practice Corner **12.1**

Build your Confidence...

1. How much angular distance will be covered by the minute hand of a correct clock in a period of 2 h 20 min?
(a) 140° (b) 840° (c) 320° (d) 520°

2. Find the angle traced by hour hand of a correct clock between 8 O'clock and 2 O'clock.
(a) 180° (b) 168° (c) 150° (d) 144°

3. What degree of angle is made by the hands of clock at 10 : 35? **[RRB (ALP) 2008]**
(a) $72\frac{1^\circ}{2}$ (b) $97\frac{1^\circ}{2}$ (c) $107\frac{1^\circ}{2}$ (d) $117\frac{1^\circ}{2}$

4. What will be the angle between the hands of clock at 7 : 10? **[UP B. Ed. 2012]**
(a) 185° (b) 155° (c) 170° (d) 165°

5. What will be the angle between the hands of clock at 9 : 30? **[UP B. Ed. 2010]**
(a) 75° (b) 90° (c) 105° (d) 120°

6. Find the angle between the two hands of clock at 4 : 10.
(a) 61° (b) 68° (c) 55° (d) 65°

7. What will be the measurement of the angle made by the hands of a clock when the time is 8 : 35?
(a) 32.4° (b) 37.5° (c) 45° (d) 47.5°

8. What angle will be traced by the hands of a clock at 12 : 55?
(a) $87\frac{1^\circ}{2}$ (b) $67\frac{1^\circ}{2}$ (c) $57\frac{1^\circ}{2}$ (d) $27\frac{1^\circ}{2}$

9. What angle will be traced by the hands of a clock at 7 : 35? **[MAT 2010]**
(a) $7\frac{1^\circ}{2}$ (b) $17\frac{1^\circ}{2}$ (c) $27\frac{1^\circ}{2}$ (d) $37\frac{1^\circ}{2}$

10. What angle will be formed between the hands of clock at 3 : 30?
(a) 95° (b) 65° (c) 85 (d) 75°

11. What will be angle between the hands of clock at 8 : 30? **[SSC (CPO) 2015]**
(a) 15° (b) 30°
(c) 45° (d) 75°

12. Find the angle between the hands of clock at 8 : 20. **[Hotel Mgmt 2012]**
(a) 130° (b) 115° (c) 125° (d) 140°

13. How many times do the hands of a clock coincide in a day?
(a) 24 (b) 22 (c) 21 (d) 20

14. How many times the hand of a clock are at right angle in a day?
(a) 24 (b) 48 (c) 22 (d) 44

15. How many times in 24 h the hands of a clock are in straight line but opposition in directions?
(a) 20 (b) 22 (c) 24 (d) 48

16. How many times in 24 h the hands of a clock are straight?
(a) 48 (b) 44 (c) 24 (d) 22

17. From 1 O'clock afternoon upto 10 O'clock in the night, the hands of a clock will be at right angle .... times. **[IAS 2009]**
(a) 9 (b) 10
(c) 18 (d) 20

18. At what time between 4 O'clock and 5 O'clock will hands of a clock be together?
(a) $24\frac{9}{11}$ min past 4 (b) $23\frac{9}{11}$ min past 4
(c) $21\frac{9}{11}$ min past 4 (d) $21\frac{7}{11}$ min past 4

19. At what time between 4 and 5 O'clock will the hands of a watch point in opposite directions?
(a) 45 min past 4 (b) 40 min past 4
(c) $50\frac{4}{11}$ min past 4 (d) $54\frac{6}{11}$ min past 4

20. At what time between 6 O' clock and 7 O'clock will the hands of a clock be at right angle?
(a) $49\frac{1}{11}$ min past 6 and $16\frac{4}{11}$ min past 6
(b) $50\frac{1}{11}$ min past 6 and $16\frac{4}{11}$ min past 6
(c) $47\frac{1}{11}$ min past 6 and $42\frac{1}{11}$ min past 6
(d) $47\frac{1}{11}$ min past 6 and $16\frac{4}{11}$ min past 6

Response & Interpretations **(12.1)**

1. (*b*) Angle traced by minute hand per minute = 6°

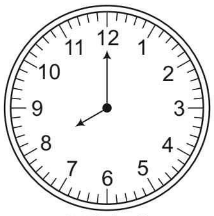
$\therefore$ Angle traced by minute hand in 2 h 20 min

$= [(2 \times 60) + 20] \times 6°$

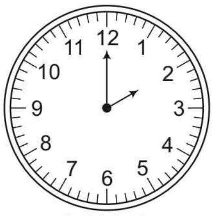
$= (120 + 20) \times 6°$

$= 140 \times 6° = 840°$

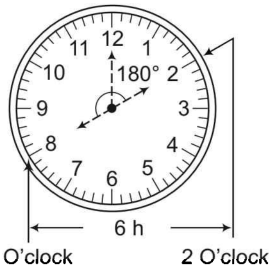
2. (*a*) $\because$ Angle traced by hour hand per minute $= \left(\frac{1}{2}\right)^{\circ}$



8 O'clock



2 O'clock

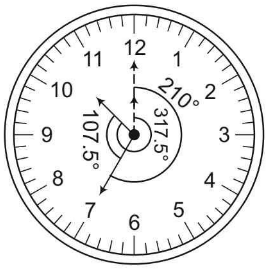


$\therefore$ Angle traced by hour hand in 1 h $= \frac{1°}{2} \times 60 = 30°$

Time period between 8 O' clock to 2 O' clock = 6 h

$\therefore$ Angle traced by hour hand in 6h $= 30° \times 6 = 180°$

3. (*c*) $\because$ Angle traced by hour hand per minute $= \left(\frac{1}{2}\right)^{\circ}$



Time = 10 : 35

Angle traced by hour hand in 10 h 35 min

$= [(10 \times 60) + 35] \times \frac{1°}{2}$

$= \left(\frac{635}{2}\right)^{\circ} = 317.5°$

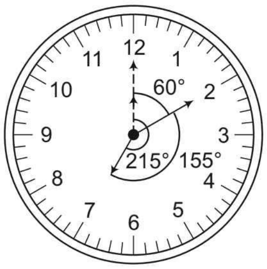
$\because$ Angle traced by minute hand per minute = 6°

$\therefore$ Angle traced by minute hand in 35 min $= 35 \times 6° = 210°$

$\therefore$ Required angle $= (317.5° - 210°) = 107.5°$

$= 107\frac{1}{2}^{\circ}$

4. (*b*) $\because$ Angle traced by hour hand per minute $= \left(\frac{1}{2}\right)^{\circ}$



Time = 7 : 10

$\therefore$ Angle traced by hour hand in 7 h 10 min

$= (7 \times 60 + 10) \times \frac{1°}{2}$

$= 430 \times \frac{1°}{2} = 215°$

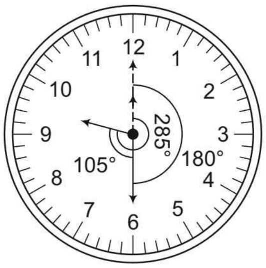
$\because$ Angle traced by minute hand per minute = 6°

$\therefore$ Angle traced by minute hand in 10 min

$= 10 \times 6° = 60°$

$\therefore$ Required angle $= (215° - 60°) = 155°$

5. (*c*) $\because$ Angle traced by hour hand per minute $= \left(\frac{1}{2}\right)^{\circ}$



Time = 9 : 30

$\therefore$ Angle traced by hour hand in 9 h 30 min

$= [(9 \times 60) + 30] \times \frac{1°}{2}$

$= 570 \times \frac{1°}{2} = 285°$

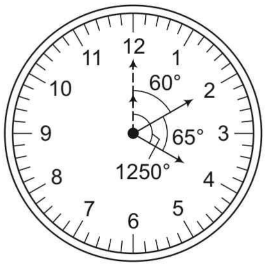
$\because$ Angle traced by minute hand per minute = 6°

$\therefore$ Angle traced by minute hand in 30 min

$= 30 \times 6° = 180°$

$\therefore$ Required angle $= (285° - 180°) = 105°$

6. (*d*) ∵ Angle traced by hour hand per minute = $\left(\frac{1}{2}\right)^\circ$


12
1
2
3
4
5
6
7
8
9
10
11
60°
65°
1250°

Time = 4 : 10

∴ Angle traced by hour hand in 4 h 10 min

$$= [(4 \times 60) + 10] \times \frac{1^\circ}{2}$$

$$= 250 \times \frac{1^\circ}{2} = 125^\circ$$

∵ Angle traced by minute hand per minute = 6°

∴ Angle traced by minute hand in 10 min = 10 × 6°

= 60°

∴ Required angle = 125° − 60° = 65°

7. (*d*) Angle traced by hour hand in 35 min after 8

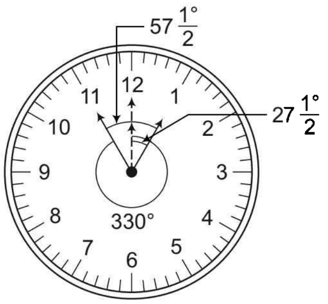
$$= 35 \times \frac{1}{2} = 17.5^\circ$$

At 8 : 35, min hand is at 7, and angle between 8 and 7 = 30°

∴ Required angle between two hand at 8 : 35 = 30° + 17.5°

= 47.5°

8. (*c*) ∵ Angle traced by hour hand per minute = $\left(\frac{1}{2}\right)^\circ$


$57\frac{1^\circ}{2}$
$27\frac{1^\circ}{2}$
12
1
2
3
4
5
6
7
8
9
10
11
330°

Time = 12 : 55

∴ Angle traced by hour hand in 12 h 55 min (*i.e.,* at 0 : 55)

$$= 55 \times \frac{1^\circ}{2} = 27\frac{1^\circ}{2}$$

∵ Angle traced by minute hand per minute = 6°

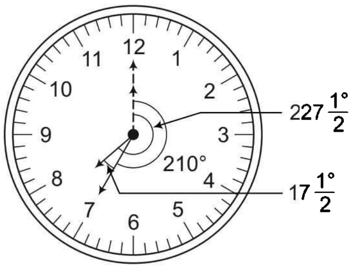
∴ Angle traced by minute hand in 55 min = 55 × 6° = 330°

∴ Required angle = $360^\circ - \left(330^\circ - 27\frac{1^\circ}{2}\right)$

$$= 360^\circ + 27\frac{1^\circ}{2} - 330^\circ$$

$$= 387\frac{1^\circ}{2} - 330^\circ = 57\frac{1^\circ}{2}$$

9. (*b*) Angle traced by hour hand per minute = $\left(\frac{1}{2}\right)^\circ$


12
1
2
3
4
5
6
7
8
9
10
11
$227\frac{1^\circ}{2}$
210°
$17\frac{1^\circ}{2}$

Time = 7 : 35

∴ Angle traced by hour hand in 7 h 35 min

$$= [(7 \times 60) + 35] \times \frac{1^\circ}{2} = (420 + 35) \times \frac{1^\circ}{2}$$

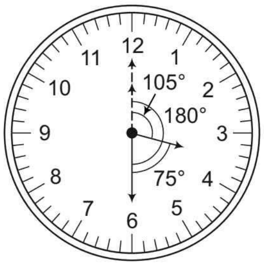
$$= 455 \times \frac{1^\circ}{2} = 227\frac{1^\circ}{2}$$

∴ Angle traced by minute hand per minute = 6°

Angle traced by minute hand in 35 min = 35 × 6° = 210°

∴ Required angle = $227\frac{1^\circ}{2} - 210^\circ = 17\frac{1^\circ}{2}$

10. (*d*) ∴ Angle traced by hour hand per minute = $\left(\frac{1}{2}\right)^\circ$


12
1
2
3
4
5
6
7
8
9
10
11
105°
180°
75°

Time = 3 : 30

∴ Angle traced by hour hand in 3 h 30 min

$$= [(3 \times 60) + 30] \times \frac{1^\circ}{2} = (180 + 30) \times \frac{1^\circ}{2}$$

$$= 210 \times \frac{1^\circ}{2} = 105^\circ$$

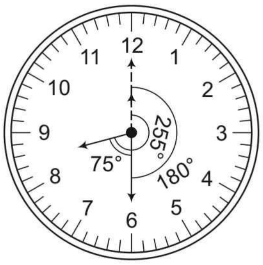
∴ Angle traced by minute hand per minute = 6°

∴ Angle traced by minute hand in 30 min = 30 × 6°

= 180°

∴ Required angle = 180° − 105° = 75°

11. (*d*) ∵ Angle traced by hour hand per minute = $\left(\frac{1}{2}\right)^\circ$


12
1
2
3
4
5
6
7
8
9
10
11
255°
75°
180°

Time = 8 : 30

∴ Angled traced by hour hand in 8 h 30 min

$$= \left[\{(8 \times 60) + 30\} \ \frac{1}{2}\right]^\circ = \left[\{480 + 30\} \times \frac{1}{2}\right]^\circ$$

$$= 510 \times \left(\frac{1}{2}\right)^\circ = 255^\circ$$

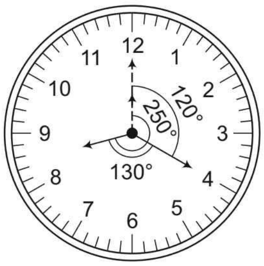
∴ Angle traced by minute hand per minute = 6°

∴ Angle traced by minute hand in 30 min

$$= 30 \times 6^\circ = 180^\circ$$

∴ Required angle = (255° − 180°) = 75°

12. (*a*) ∵ Angle traced by hour hand per minute = $\left(\frac{1}{2}\right)^\circ$



Time = 8 : 20

∴ Angle traced by hour hand in 8h 20 min

$$= (8 \times 60 + 20) \times \frac{1}{2} = 250^\circ$$

Again, angle traced by minute hand per minute = 6°

∴ Again traced by minute hand in 20 min

$$= 20 \times 6^\circ = 120^\circ$$

∴ Required angle = (250° − 120°) = 130°

13. (*b*) We know that hands of a clock coincide once in every hour but between 11 O'clock and 1 O'clock they coincide only once. Therefore, the hands of a clock coincide 11 times in every 12 h.

Hence, they will coincide (11 × 2) *i.e.,* 22 times in 24 h.

14. (*d*) We know that the hands of a clock are at right angle twice in every hour but between 2 and 4 O' clock there is a common position at 3 O' clock and also between 8 and 10 O' clock there is common position at 9 O' clock. So, they are at right angles 22 times in 12 h and therefore, in 24 h or in a day they are at right angle 44 times.

15. (*b*) The hands of a clock are in the same straight line (but opposite in direction) 11 times in every 12 h, because between 5 and 7 they point in opposite direction at 6 O'clock only. Therefore, in a day (24 h) the hands points in the opposite direction (2 × 11) = 22 times.

16. (*b*) The hands are in opposite direction (at angular distance of 180°) or coincide (at 0° angular distance) 22 times in every 12h. Hence, in 24 h, hands are straight (coincide or in opposite direction) 22 × 2 = 44 times.

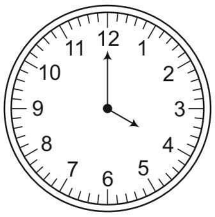
17. (*c*) Time period from 1 O'clock afternoon to 10 O'clock night

$$= (10 - 1)\,h = 9\,h$$

As we know, hands are at right angle 2 times in an hour.

Hence, in 9 h they will be at right angle 9 × 2 = 18 times

18. (*c*) At 4 O' clock, hour hand is at 4 and minute hand is at 12.



Time = 4 O'clock

To be together with hour hand minute hand will have to gain 20 min.

As 55 min are gained by minute hand in 60 min.

∴ 20 min will be gained in $\left(\frac{60}{55} \times 20\right)$ min

$$= \left(\frac{60 \times 4}{11}\right) \text{min} = \frac{240}{11} \text{min}$$

$$= 21\frac{9}{11} \text{min}$$

Hence, the hands will be together at $21\frac{9}{11}$ min past 4.

19. (*d*) At 4 O' clock, both the hands are 20 min apart and for the hands to be in the opposite direction they have to be 30 min apart.

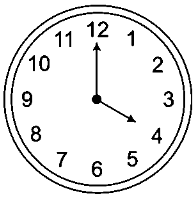


Fig. (i)

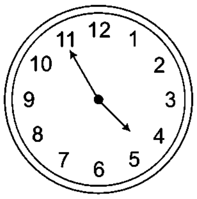


Fig. (ii)

From Fig. (i) and Fig. (ii) it is clear , that minute hand has to travel (20 + 30) min space in order to be in opposite direction to each other.

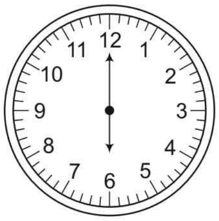
Now, 55 min space is gained by minute hand in 60 min.

Therefore, 50 min space will be gained in

$$\left(\frac{60}{55} \times 50\right) \text{min} = 54\frac{6}{11} \text{min.}$$

Hence, the hands of the clock will be in opposite direction at $54\frac{6}{11}$ min past 4.

20. (*a*) At 6 O' clock, minute hand is 30 min spaces behind the hour hand. Now, for being at right angle the two hands will have to be 15 min spaces apart. So, they are at right angles in the following cases



6 O'clock

Case I When minute hand is 15 min spaces behind the hour hand.

In this case, minute hand will have to gain (30 –15) = 15 min over the hour hand

Since, minute hand gains 55 min over hour hand in 60 min,

∴ Minute hand will gain 15 min in $\left(\frac{60}{55} \times 15\right)$ min

$$= \frac{60 \times 3}{11} \text{ min} = \frac{180}{11} \text{ min} = 16\frac{4}{11} \text{ min}$$

Hence, they are at right angle at $16\frac{4}{11}$ min past 6.

Case II When minute hand is 15 min spaces ahead of hour hand.

In this case, minute hand will have to gain (30 + 15) = 45 min over the hour hand.

Since minute hand gains 55 min in 60 min,

∴ Minute hand will gain 45 min in $\left(\frac{60}{55} \times 45\right)$ min

$$= \left(\frac{60}{11} \times 9\right) \text{ min} = \frac{540}{11} \text{ min} = 49\frac{1}{11} \text{ min}$$

Hence, hands will be at right angle at $49\frac{1}{11}$ min past 6.

Type 3 Faulty Clocks

A clock which gains or loses time is called a faulty clock. If a clock indicates more than the actual time, then the clock is said to be fast. If a clock indicates 5 : 10 when the correct time is 5, it is said to be 10 min too fast.

If a clock indicates less than the actual time, then the clock is said to be slow. If a clock indicates 4 : 50, when the correct time is 5, it is said to be 10 min too slow. Whenever a clock is too fast or too slow, then both the hands of the clock will not coincide at the intervals of $65\frac{5}{11}$ min.

In this type of questions, some conditions of faulty clocks are given and on this basis, the candidate is required either to find out the correct time or the time at which the clock will slow the correct time. Sometimes the questions are asked about finding the comparative time of two faulty clocks.

***Ex* 7** Two clocks are set correctly at 9 am on Monday. Both the clocks gain 3 min and 5 min respectively in an hour. What time will the second clock register, if the first clock which gains 3 min in an hour shows the time as 27 min past 6 pm on the same day?

(a) 6 : 27 pm (b) 6 : 45 pm (c) 6 : 25 pm (d) 6 : 50 pm
(e) None of these

Sol. (*b*) According to the question,

First clock gains = 3 min/h and second clock gains = 5 min/h

So, the difference in minutes between these two clocks in one hour = (5 – 3) min = 2 min

Total time from 9 pm to 6 pm on Monday = 9 h. So, first clock gains in 9 h = (9 × 3) min = 27 min and shows the time as 6:27 pm

Also, the second clock gains in 9 h = (9 × 5) min = 45 min and shows the time as 6 : 45 pm.

Type 4 Time Gained or Lost by Clock

In this type of questions, the time interval of the correct time in which the minute hand of a clock overtakes the hour hand is given and the candidate is required to find out the time gained or lost by the clock.

If the minute hand of a clock overtakes the hour hand at intervals of x min of the correct time, then the clock loses or gains $\left(\frac{720}{11} - x\right)\left(\frac{60 \times 24}{x}\right)$ min in a day.

➘ If the result is (+ ve), then clock gains and if the result is (– ve), then clock loses.

***Ex* 8** The minute hand of a clock overtakes the hour hand at intervals of 63 min of the correct time. How much does a clock gain or loose in a day?

(a) $54\frac{8}{77}$ min (gain) (b) $56\frac{8}{77}$ min (gain)
(c) $53\frac{8}{77}$ min (loss) (d) $53\frac{8}{77}$ min (gain)

Sol. (*b*) Method I

As we know that in a correct clock, the minute hand gains 55 min spaces over the hour hand in 60 min.

To be together again, the minute hand must gain 60 min over the hour hand.

60 min are gained in $\left(\frac{60}{55} \times 60\right)$ min $= 65\frac{5}{11}$ min

But they are together after 63 min.

$\therefore$ Gain in 63 min $= \left(65\frac{5}{11} - 63\right) = 2\frac{5}{11}$ min $= \frac{27}{11}$ min

Gain in 24 h $= \left(\frac{27}{11} \times \frac{60 \times 24}{63}\right)$ min $= \frac{4320}{77}$ min $= 56\frac{8}{77}$ min

As result is positive, therefore clock gains $56\frac{8}{77}$ min.

Method II

In the given question, $x = 63$ min

According to the formula,

Required result $= \left(\frac{720}{11} - x\right)\left(\frac{60 \times 24}{x}\right)$ min

$= \left(\frac{720}{11} - 63\right)\left(\frac{60 \times 24}{63}\right)$ min

$= \frac{27}{11} \times \frac{60 \times 8}{21} = 56\frac{8}{77}$ min

(gain as sign is positive)

Practice Corner **12.2**

Build your Confidence...

1. A clock becomes 12 s fast in every 3 h. If it is made correct at 3 O'clock in the afternoon of Sunday, then what time will it show at 10 O'clock Tuesday morning?

(a) 2 min 52 s past 10 (b) 2 min 54 s past 10
(c) 2 min 50 s past 10 (d) 2 min 48 s past 20

2. A clock becomes 15 min fast every day. If it is made correct at 12 O'clock in the afternoon, then what time will it show at 4 O'clock in the morning?

(a) 4 : 10 (b) 4 : 15 (c) 4 : 20 (d) 4 : 30

3. A clock is set right at 5 am. The clock loses 16 min in 24 h. What will be the right time when the clock indicates 10 pm on the 3rd day?

(a) 11 : 15 pm (b) 11 pm (c) 12 pm (d)12 : 30 pm

4. A watch, which gains uniformly is 2 min slow at noon on Monday and is 4 min, 48s fast at 2 pm on the following Monday. At what time it was correct?

(a) 2 pm on Tuesday (b) 2 pm on Wednesday
(c) 3 pm on Thursday (d) 1 pm on Friday
(e) None of these

5. A clock, which loses uniformly, is 15 min fast at 9 am on 3rd of the December and is 25 min less than the correct time at 3 pm on 6th of the same month. At what time it was correct?

(a) 2 : 15 am on 3rd (b) 2 : 15 pm on 4th
(c) 2 : 15 pm on 3rd (d) 2 : 15 am on 4th

6. Two clocks are set correctly at 10 am on Sunday. One clock loses 3 min in an hour while the other gains 2 min in an hour. By how many minutes do the two clocks differ at 4 pm on the same day?

(a) 25 min (b) 20 min
(c) 35 min (d) 30 min

7. The minute hand of a clock overtakes the hour hand at intervals of 65 min of the correct time. How much does a clock gain or lose in a day?

(a) $10\frac{10}{143}$ min (gain) (b) $10\frac{10}{143}$ min (loss)
(c) $9\frac{10}{143}$ min (gain) (d) $9\frac{10}{143}$ min (loss)

8. The minute hand of a clock overtakes the hour hand at intervals of 58 min of the correct time. How much does a clock gain or lose in a day?

(a) $185\frac{25}{319}$ min (loss) (b) $185\frac{25}{319}$ min (gain)
(c) $184\frac{25}{319}$ min (loss) (d) $184\frac{25}{319}$ min (gain)

9. The minute hand of a clock overtakes the hour hand at intervals of 62 min of the correct time. How much does a clock gain or lose in a day?

(a) $81\frac{80}{341}$ min (loss) (b) $81\frac{80}{341}$ min (gain)
(c) $80\frac{80}{341}$ min (loss) (d) $80\frac{80}{341}$ min (gain)

10. The minute hand of a clock overtakes the hour hand at intervals of 76 min of the correct time. How much does a clock gain or lose in a day?

(a) $198\frac{169}{209}$ min (loss) (b) $198\frac{169}{209}$ min (gain) (c) $199\frac{169}{209}$ min (loss) (d) $199\frac{169}{209}$ min (gain)

Response & Interpretations **(12.2)**

1. (*a*) Total time from 3 O' clock Sunday afternoon to 10 O' clock Tuesday morning = 43 h

Total increased time = $\frac{12}{3} \times 43 = 172$ s = 2 min 52 s

∴ Time at 10 O' clock Tuesday morning = 2 min 52 s past 10

2. (*a*) Total time from 12 O' clock afternoon to 4 O' clock morning

= 12 O' clock after noon to 12 O' clock night

+ 12 O' clock night to 4 O' clock morning

= 12 + 4 = 16 h

Since in 24 h (1 day), the clock becomes 15 min fast.

∴ In 16 h clock will be $\frac{15 \times 16}{24} = 10$ min fast

∴ Required time = 4 : 00 + 0 : 10 = 4 : 10

3. (*b*) Time from 5 am of a particular day to 10 pm on the 3rd day is 89 h. Now, the clock loses 16 min in 24 h or in other words, we can say that 23 h 44 min of this clock is equal to 24 h of the correct clock.

$\left(23+\frac{44}{60}\right)=\frac{356}{15}$ h of this clock = 24h of the correct clock

∴ 89 h of this clock = $\left(\frac{24 \times 15}{356} \times 89\right)$ h the correct clock

= 90 h of the correct clock

or 89 h of this clock = 90 h of the correct clock. Therefore, it is clear that in 90 h this clock loses 1 h and hence, the correct time is 11 pm when this clock shows 10 pm.

4. (*b*) Time from Monday noon (12 pm) to 2 pm the following Monday = 7 days 2 h = 170 h

Now, the watch gains $\left(2 + 4\frac{4}{5}\right)$ min from Monday (12 pm) to 2 pm, the following Monday.

In other words, the watch gains $\frac{34}{5}$ min in 170 h.

Therefore, it will gain 2 min in $\left(\frac{170 \times 5}{34} \times 2\right) = 50$ h

= 2 days 2 h

Therefore, the watch is correct after 2 days 2 h from Monday noon or at 2 pm Wednesday.

5. (*b*) According to the question,

Total time from 9 am on 3rd of the December to 3 pm on 6th of the December = 3 days 6 h = 78 h

Also, the clock loses in 78 h = (15 + 25) = 40 min

So, the clock loses 15 min in = $\frac{15}{40} \times 78 = 29$ h 15 min

Therefore, the clock is correct after 29 h 15 min from 9 am on 3rd December *i.e.*, at 2:15 pm on 4th December.

6. (*d*) According to the question,

One clock loses = 3 min/h

Other clock gains = 2 min/h

So, the difference in min between these two clocks in one hour = 2 − (−3) = (2 + 3) min = 5 min

(Loss in minutes = Negative sign)

Total time from 10 am to 4 pm on Sunday = 6h

Therefore, the difference in minutes between these two clocks from 10 am to 4 pm on Sunday = (5 × 6) = 30 min

7. (*a*) Required result = $\left(\frac{720}{11} - x\right)\left(\frac{60 \times 24}{x}\right)$ min

Here, $x = 65$

∴ Required result = $\left(\frac{720}{11} - 65\right)\left(\frac{60 \times 24}{65}\right)$ min

$= \frac{5}{11} \times \frac{288}{13}$ min

$= 10\frac{10}{143}$ min gain

(gain as sign is positive)

8. (*b*) Required result = $\left(\frac{720}{11} - x\right)\left(\frac{60 \times 24}{x}\right)$ min

Here, $x = 58$

∴ Required result = $\left(\frac{720}{11} - 58\right)\left(\frac{60 \times 24}{58}\right)$ min

$= \frac{82}{11} \times \frac{720}{29}$ min $= 185\frac{25}{319}$ min gain

(gain as sign is positive)

9. (*d*) Required result = $\left(\frac{720}{11} - x\right)\left(\frac{60 \times 24}{x}\right)$ min

Here, $x = 62$

∴ Required result = $\left(\frac{720}{11} - 62\right)\left(\frac{60 \times 24}{62}\right)$ min

$= \frac{38}{11} \times \frac{720}{31}$ min $= 80\frac{80}{341}$ min gain

(gain as sign is positive)

10. (*c*) ∴ Required result = $\left(\frac{720}{11} - x\right)\left(\frac{60 \times 24}{x}\right)$ min

Here, $x = 76$

∴ Required result = $\left(\frac{720}{11} - 76\right)\left(\frac{60 \times 24}{76}\right)$ min

$= \frac{-116}{11} \times \frac{360}{19}$ min $= -199\frac{169}{209}$ min

(loss as sign is negative)

Master Exercise

Take a Leap...

1. The priest told the devotes, 'the bell is rung at regular intervals of 45 min. The last bell was rung 5 min ago. The next bell is due to be rung at 7 : 45 am. At what time did the priest give the information to be devotes?

(a) 6 : 55 am (b) 7 : 00 am (c) 7 : 05 am (d) 7 : 40 am

2. A bus for Delhi leaves every 30 min from a bus stand. An enquiry clerk, Rambabu told Shyamlal, a passenger that the bus has already left 10 min ago and the next bus will leave at 9:35 am. At what time did the enquiry clerk give this information to Shyamlal?

(a) 9 : 15 am (b) 9 : 10 am (c) 9 : 20 am (d) 9 : 05 am

3. Aseem leaves his house at 20 min to 7 in the morning, reaching Kaushal's house in 25 min, they finish their breakfast in another 5 min and leave for their office which takes another 35 min. At what time do they leave Kaushal's house to reach their office?

(a) 7 : 55 am (b) 8 : 15 am (c) 7 : 45 am (d) 7 : 20 am

4. There are 20 people working in an office. The first group of five works between 8 am and 2 pm. The second group of ten works between 10 am and 4 pm and the third group of five works between 12 noon and 6 pm. There are three computers in the office which all the employees frequently use. During which of the following hours, the computers are likely to be used the most?

(a) 2 : 00 pm - 4 : 00 pm (b) 12 noon - 2 : 00 pm
(c) 1 : 00 pm - 3 : 00 pm (d) 10 am - 12 noon

5. The train for Chandigarh leaves every two and a half hour from New Delhi Railway Station. An announcement was made at the station that the train for Chandigarh had left 40 min ago and the next train will leave at 18 h. At what time was the announcement made?

(a) 17 : 05 h (b) 17 : 20 h
(c) 16 : 10 h (d) 15 : 30 h

6. Raveena left house for the bus stop 15 min earlier than usual. It takes 10 min to reach the stop. She reached the stop at 8 : 40 am. What time does he usually leave home for the bus stop?

(a) 8 : 55 am (b) 8 : 45 am
(c) 8 : 30 am (d) 8 : 05 am

7. Reaching the place of meeting 20 min before 8 : 50 h, Sujay found himself 30 min earlier than the person who came 40 min late. What was the scheduled time meeting?

(a) 8 : 09 (b) 8 : 05 (c) 8 : 20 (d) 8 : 10

8. A tortoise walks 1 km in 4h. He takes rest of 20 min after every kilometer. So, you have to find out, how much time would be taken by tortoise to complete 3.5 km journey? **[SSC (CGL) 2011]**

(a) 14 h (b) 13 h (c) 15 h (d) 12 h

9. How many times do the hands of a clock coincide in a day?

(a) 24 (b) 20 (c) 12 (d) 22

10. The minute hand of a clock overtakes the hour hand at intervals of 50 min of the correct time. How much does a clock gain or lose in a day?

(a) $443\frac{28}{55}$ min (gain) (b) $43\frac{28}{55}$ min (loss)
(c) $445\frac{5}{55}$ min (gain) (d) $444\frac{28}{55}$ min (loss)

11. The minute hand of a clock overtakes the hour hand at intervals of 88 min of the correct time. How much does a clock gain or lose in a day?

(a) $368\frac{112}{121}$ min (loss) (b) $368\frac{112}{121}$ min (gain)
(c) $369\frac{112}{121}$ min (loss) (d) $369\frac{112}{121}$ min (gain)

12. Find at what time between 8 and 9 O'clock will the hands of a clock be in the same straight line but not together?

(a) $10\frac{10}{11}$ min past 8 (b) $50\frac{10}{11}$ min past 8
(c) $10\frac{12}{11}$ min past 8 (d) 10 min past 8

13. At what time between 3 and 4 O'clock will the hands of a clock coincide?

(a) 45 min past 3 (b) $15\frac{10}{11}$ min past 3
(c) $10\frac{12}{11}$ min past 3 (d) $16\frac{4}{11}$ min past 3

14. At what time between 4 and 5 O'clock will the the hands of a clock be at right angle?

(a) 30 min past 4
(b) $16\frac{3}{4}$ min past 4
(c) $38\frac{2}{11}$ min past 4
(d) 33 min past 4

15. At what time between 5 and 6 are the hands of a clock coincident?

(a) 22 min past 5
(b) 30 min past 5
(c) $22\frac{8}{11}$ min past 5
(d) $27\frac{3}{11}$ min past 5

16. At what time between 9 and 10 O'clock will the hands of a watch be together?

(a) 45 min past 9
(b) 50 min past 9
(c) $49\frac{1}{11}$ min past 9
(d) $48\frac{2}{11}$ min past 9

17. At what angle the hands of a clock are inclined at 15 min past 5?

(a) $72\frac{1}{2}^\circ$
(b) $67\frac{1}{2}^\circ$
(c) $58\frac{1}{2}^\circ$
(d) 64°

18. What angle will be formed by the hands of a clock at 11 : 20?

(a) 120°
(b) 130°
(c) 140°
(d) 150°

19. A clock is set right at 8 am. The clock gains 10 min in 24 h. What will be the right time when the clock indicates 1 pm on the following day?

(a) 12 : 40 pm
(b) 12 : 48 pm
(c) 12 pm
(d) 10 pm

20. A watch is one minute slow at 1 : 00 pm on Tuesday and 2 min fast at 1 : 00 pm on Thursday. When did it show the correct time? **[UP PSC 2012]**

(a) 1: 00 am on Wednesday
(b) 5: 00 am on Wednesday
(c) 1: 00 pm on Wednesday
(d) 5: 00 pm on Wednesday

21. A clock is set right at 8 am, the clock uniformly loses 24 min in a day. What will be the right time when the clock indicates 4 pm on the next day?

(a) 4 : 50 pm
(b) 4 : 30 pm
(c) 4 : 50 am
(d) 4 : 32 am

22. A watch, which gains uniformly, is 3 min slow at 12 noon on Sunday and is 5 min 36 seconds fast at 4 pm on the next Sunday. At what time it was correct?

(a) 12 am on same day
(b) 12 pm on Monday
(c) 12 am on Tuesday
(d) 12 am on Wednesday

23. A class starts at 10 : 00 am lasts till 1 : 27 pm. Four periods are held during this interval. After every period, 5 min rest are given to the students. The exact duration of each period is **[RPSC 2013]**

(a) 40 min
(b) 48 min
(c) 51 min
(d) 53 min

24. If each of the twelve digits on a watch is replaced by English vowels a, e, i, o, u in sequence (1 by a, 2 by e, and so on), the hour hand will be between which pair of vowels at 9 : 30 am? **[CMAT 2013]**

(a) ae
(b) ei
(c) io
(d) ou

25. If the time in a clock is 20 min past 2, then find the angle between the hands of the clock. **[IIFT 2013]**

(a) 45°
(b) 50°
(c) 60°
(d) 120°

26. A series of letters, digits and symbol is given below

L • 4 P β ϕ N 7 @ 9 θ 6 P • D * E H T ↓ M > 3 #

If the digits/numbers of the dial of clock are replaced in such a way that ϕ takes the place of 6, N takes the place 7 and this arrangement goes on in the same way, then what comes in place of 11?

(a) 7
(b) θ
(c) *
(d) 9

27. The digits/numbers from 1 to 24 to be represented by the dial of a clock are replaced by the letters of English alphabet. The replacement is started with the letter C. Find the letter which represent 16 O'clock. **[SSC (FCI) 2010]**

(a) W
(b) P
(c) S
(d) R

Response & Interpretations (Master Exercise)

1. (*c*) Time of ringing last bell = (7 : 45 – 0 : 45) = 7 : 00 am.

But it happened 5 min before the priest gave the information to the devotees.

∴ Time of giving information = 7 : 00 + 0 :05 = 7 : 05 am

2. (*a*) As next bus leaves at 9 : 35 am.

∴ Previous bus left at (9 : 35 – 0 : 30) = 9 : 05 am.

The time when enquiry clerk gave this information

= 9 : 05 + 0 : 10 = 9 : 15 am

3. (*c*) Aseem leaves his house at 20 min to 7, *i.e.,* at 6 : 40 am

He reaches Kaushal's house at 6 : 40 + 0 : 25 = 7 : 05 am

They finish their break fast at = 7 : 05 + 0 : 05 = 7 : 10 am

Then, both leave for office at = 7 : 10 + 0 : 35 = 7 : 45 am

Hence, option (c) is the correct answer

4. (*b*) It is obvious that computers would be used most when all the three groups are working simultaneously and this happens during the period 12 noon to 2 pm.

5. (*c*) Time of the last train leaving the station

= (18 : 00 – 2 : 30) h = 15 : 30 h

But this happens 40 min before the announcement is made.

∴ Time of making announcement = (15 : 30 + 0 : 40)

= 16 : 10 h

6. (*b*) Clearly, Raveena left home 10 min before 8 : 40 am *i.e.,* at 8 : 30 am but it was 15 min earlier than usual, so she usually leaves for the stop at (8 : 30 + 0 : 15) = 8 : 45 am.

7. (*c*) Time of Sujay's reaching the place = (8 : 50 – 0 : 20)h

= 8 : 30 h

It is clear that the person who was 40 min late would reach the place at 9 : 00 h.

∴ Scheduled time of meeting = (9 : 00 – 0 : 40) h

= 8 : 20 h

8. (*c*) Total time taken by tortoise

= (4 + 4 + 4 + 2) h and (20 + 20 + 20) min

= 14 h + 60 min = 15 h

9. (*d*) The hands of a clock coincide 11 times in every 12 h (because between 11 and 1 O' clock, there is a common position at 12 O'clock).

Therefore, in a day the hands coincide 22 times.

10. (*c*) Required result = $\left(\frac{720}{11}-x\right)\left(\frac{60\times24}{x}\right)$min

Here, $x = 50$

∴ Required result = $\left(\frac{720}{11}-50\right)\left(\frac{60\times24}{50}\right)$min

$= \left(\frac{170}{11}\times\frac{144}{5}\right)$min

$= 445\frac{5}{55}$ min gain

(gain as sign is positive)

11. (*a*) Required result = $\left(\frac{720}{11}-x\right)\left(\frac{60\times24}{x}\right)$min

Here, $x = 88$

∴ Required result = $\left(\frac{720}{11}-88\right)\left(\frac{60\times24}{88}\right)$ min

$= \frac{-248}{11}\times\frac{180}{11}$min

$= -368\frac{112}{121}$min

(loss as sign is negative)

12. (*a*) Fig. (i) shows the positions of the hands of the clock at 8 O'clock and it is clear that they are 20 min apart. To be in the straight line, they have to be 30 min apart.

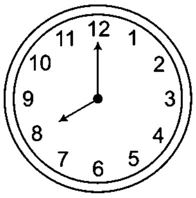


Fig. (i)

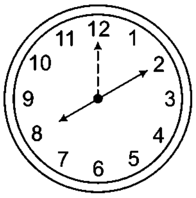


Fig. (ii)

So, the minute hand will have to gain 10 min space in order to be 30 min apart from hour hand.

Since 55 min are gained in 60 min,

∴ 10 min will be gained in $\frac{60}{55}\times10 = \frac{12}{11}\times10$ min

Therefore, the hands will be in straight line but not together at $10\frac{10}{11}$ min past 8.

13. (*d*) At 3 O'clock both the hands of the clock are 15 min apart. Hence, in order to be together, minute hand will have to gain 15 min spaces in order to coincide with the hour hand.

Now, 55 min are gained by minute hand in 60 min.

∴ 15 min will be gained in $\left(\frac{60}{55}\times15\right)$min = $\left(\frac{12}{11}\times15\right)$min

$= \frac{180}{11}$ or $16\frac{4}{11}$ min

Therefore, the hands will coincide at $16\frac{4}{11}$ min past 3.

14. (*c*) Between 4 and 5 O'clock the hands of the clock will be at right angle twice, first situation will occur when minute hand is 15 min spaces behind the hour hand and the second when minute hand is 15 min spaces ahead of the hour hand.

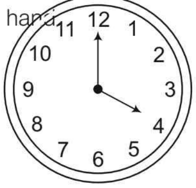


Fig. (i)

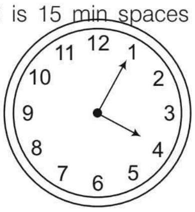


Fig. (ii)

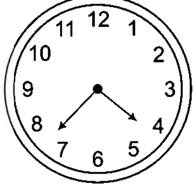


Fig. (iii)

Fig. (ii) shows the position when minute hand is 15 min spaces behind the hour hand. To come at this position, minute hand has to gain 5 min spaces from the position at 4 O'clock .

Now, 55 min are gained by minute hand in 60 min.

$\therefore$ 5 will be gained in $\frac{60}{55} \times 5 = \frac{60}{11}$ min

It means that hands of the clock will be at right angle at $5\frac{5}{11}$ min past 5.

Fig. (iii) shows the position when minute hand is 15 min spaces ahead the hour hand. To come at this position, minute hand has to gain 35 min spaces from the position at 4 O'clock.

Now, 55 min are gained in 60 min.

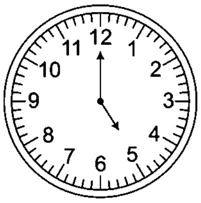
$\therefore$ 35 min spaces will be gained in 60 min $= \frac{60}{55} \times 35$ min

$= \frac{420}{11}$ min

It means that second position will come at $38\frac{2}{11}$ min past 4.

Now, in options $38\frac{2}{11}$ min past 4 is available as option (c).

15. (*d*) From the figure, we find that min hand is 25 min spaces behind the hour hand. In order to coincide, it has to again 25 min spaces.

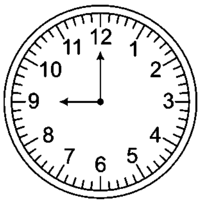


Now, 55 min are gained by minute hand in 60 min.

$\therefore$ 25 min will be gained in $\frac{60}{55} \times 25 = 27\frac{3}{11}$ min

So, the hands will coincide at $27\frac{3}{11}$ min past 5.

16. (*c*) Both the hands are 15 min spaces apart at 9 O'clock. To be together between 9 and 10, min O' clock hand has to gain 45 min.

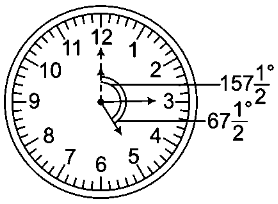


Now, minute hand gains 55 min in 60 min.

$\therefore$ It will gain 45 min in $\frac{60}{55} \times 45 = 49\frac{1}{11}$ min

Therefore, the hands will be together at $49\frac{1}{11}$ min past 9.

17. (*b*) $\because$ Angle traced by hour hand per minute $= \left(\frac{1}{2}\right)^\circ$



$\therefore$ Angle traced by hour hand in 5 h 15 min

$= (5 \times 60 + 15) \times \frac{1}{2}^\circ$

$= 315 \times \frac{1}{2}^\circ = 157\frac{1}{2}^\circ$

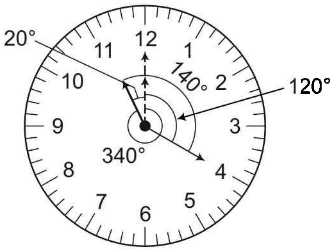
$\therefore$ Angle traced by minute hand per minute $= 6^\circ$

$\therefore$ Angle traced by minute hand in 15 min

$= 15 \times 6^\circ = 90^\circ$

$\therefore$ Required angle $= 157\frac{1}{2}^\circ - 90^\circ = 67\frac{1}{2}^\circ$

18. (*c*) $\therefore$ Angle traced by hour hand in 1 min $= \left(\frac{1}{2}\right)^\circ$



$\therefore$ Angle traced by hour hand in 11 h 20 min

$= 360^\circ - [(11 \times 60) + 20] \times \left(\frac{1}{2}\right)^\circ$

$= 360^\circ - 680 \times \frac{1}{2}^\circ = 360^\circ - 340^\circ = 20^\circ$

$\because$ Angle traced by minute hand in 1 min $= 6^\circ$

$\therefore$ Angle traced by minute hand 20 min $= 20 \times 6^\circ = 120^\circ$

$\therefore$ Required angle $= 120^\circ + 20^\circ = 140^\circ$

19. (*b*) Time from 8 am of a particular day to 1 pm on the following day = 29 h

Now, the clock gains 10 min in 24 h. it means that 24 h 10 min of this clock is equal to 24 h of the correct clock.

i.e., $\frac{145}{6}$ h of this clock = 24 h of the correct clock

$\therefore$ 29 h of this clock $= \frac{24}{145} \times 6 \times 29$

= 28 h 48 min of correct clock

29 h of this clock = 28 h 48 min of the correct clock. It means that the clock in question is 12 min faster than the correct clock. Therefore, when clock indicates 1 pm, the correct time will be 48 min past 12 *i.e.,* 12 : 48 pm.

20. (*b*) As it is given that on Tuesday at 1 : 00 pm the watch is one minute slow and on Thursday at 1 : 00 pm, it is 2 min fast; it means that the clock has gained 3 min in 48 h from Tuesday to Thursday.

Now, to show the correct time, the clock needs to gain only 1 min starting from 1 : 00 pm on Tuesday.

As, 3 min are gained in 48 h, 1 min is gained in $\frac{48}{3}$ h = 16 h

So,the clock showed the correct time at 5 : 00 am on Wednesday *i.e.,* 16 h later to 1:00 pm on Tuesday.

21. (*b*) According to the question,

Total time from 8 am of a particular day to 4 pm on the next day = 32 h.

The clock loses 24 min in 24 h.

So, 23 h 36 min of this clock = 24 h of the correct clock

$\Rightarrow \quad 23\frac{36}{60}$ *i.e.,* $\left(23+\frac{3}{5}\right)$ h of this clock

= 24 h of the correct clock

$\Rightarrow \quad \frac{118}{5}$ h of this clock = 24 h of the correct clock

So, 32 h of this clock = $\left(\frac{32\times5\times24}{118}\right)$ h of the correct clock

= 32 h 30 min (approx)

Therefore, the right time is 32 h 30 min (approx) after 8 am = 4 h 30 min = 4 : 30 pm

22. (*d*) According to the question, total time from Sunday noon (12 pm) to 4 pm the next Sunday = 7 days 4 h = 172 hours, Also, the watch gains in 172 h = 3 min + 5 min 36s

$$= 3+5\frac{36}{60}$$

$$= \left(3+5\frac{3}{5}\right) \text{min}$$

$$= \frac{43}{5} \text{min}$$

$\therefore$ Watch gains 3 min in = $\left(\dfrac{3}{\frac{43}{5}}\right)\times 172$ h

$$= \left(\frac{3\times5\times172}{43}\right) \text{h}$$

= 60 h = 2 days 12 h

Therefore, the watch is correct after 2 days 12 h from Sunday, 12 noon *i.e.,* at 12 am on Wednesday.

23. (*b*) $\because$ Total time of class = 3 h 27 min

and total time of rest = 5 × 3 = 15 min

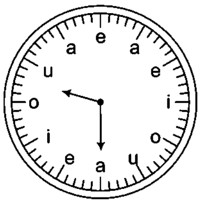
$\therefore$ Total time of all periods = 3 h 27 min – 15 min

= 3 h 12 min

= 192 min

$\therefore$ Exact duration of each period = $\frac{192}{4}$ = 48 min

24. (*d*) The clock is as shown in given figure. Clearly at 9 : 30 am, the hour hand will be between o and u.



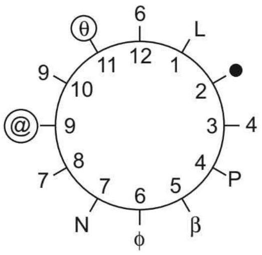
25. (*b*) 20 min past 2 = 2 + $\frac{20}{60}$ = 2 + $\frac{1}{3}$ = $\frac{7}{3}$ h

Angle traced by hour hand in $\frac{7}{3}$ h = $\frac{360°}{12}\times\frac{7}{3}$ = 70°

Angle traced by minute hand in 20 min = $\frac{360°}{60}\times 20$ = 120°

$\therefore$ Required angle = 120° – 70° = 50°

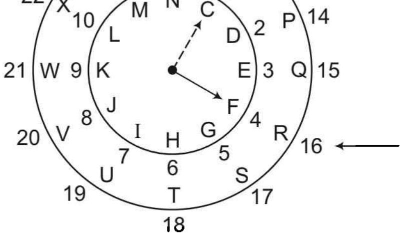
26. (*b*) According to the question, replacement is as follows



Series	Number
L	1
●	2
4	3
P	4
β	5
ϕ	6
N	7
7	8
@	9
9	10
θ	11
6	12

Clearly, θ comes in place of 11.

27. (*d*) According to the question, replacement is as follows



13

Calendar

A calendar is a systematic arrangement of day, week and month in a defined pattern with which we can easily recognise the required date, month or week of a particular day.

Different types of questions covered in this chapter are as follows

- Finding the Day on a Particular Date When Reference Day is Given
- Finding the Day on a Particular Date When Reference Day is not Given
- Finding a Week Day on the Basis of Another Week Day

Gregarian calendar is the world's most popular calendar. It also happens to be the Indian National Calendar and was adopted by India on 22nd March, 1957.

The Indian National Calendar contains the following

1. Day 2. Week 3. Month 4. Year 5. Date

The basics related to the calendars are given as follows

Day

A day is the 7th part of a week. It has 24 h. It is the smallest unit of a calendar.

Week

A week is the 52nd part of a year. It is a grouping of 7 days.

(i) Sunday (ii) Monday (iii) Tuesday (iv) Wednesday
(v) Thursday (vi) Friday (vii) Saturday

Month

A month is the 12th part of a year. It has 28/29/30/31 days.

January	31 days
February	28 days (Ordinary year or Lunar Year) 29 days (Leap year)
March	31 days
April	30 days
May	31 days
June	30 days

July	31 days
August	31 days
September	30 days
October	31 days
November	30 days
December	31 days

Year

A year is the 100th part of a century.It is the time taken by Earth to make one revolution around the Sun.

A year has 12 *months which are as follows*

1. January
2. February
3. March
4. April
5. May
6. June
7. July
8. August
9. September
10. October
11. November
12. December

Date

Date is the

- 28th/29th/30th/31st part of a month
- 365th/366th part of a year (Lunar/Leap year)

In general, we can say that a date is a name given to each day.

Century

A block of 100 yrs is called a century. *e.g,,* Each one of the year 1100, 1800, 2000, 2100 and 2900 are century years.

Ordinary Year

- An ordinary year is a year which has 365 days (52 weeks + 1 odd day). Such years are not divisible by 4 *e.g.,* 2001, 2002, 2003, 2005, 2006, 2007, 2009, 2010 and 2011, etc.
- Ordinary years in the form of century are not exactly divisible by 400. *e.g.,* 100, 200, 500, 600, 700 and 900 etc.
- In an ordinary year, the first and last days of the year are same *e.g.,* In an ordinary year, if 1st January falls on Monday, then 31st December will also be on Monday.
- In any two consecutive ordinary years, date of the next year will be one day ahead of the same date of the previous year. *e.g.,* If 2nd March, 2010 is Tuesday, then 2nd March, 2011 will be Wednesday.

Memory *Add-ons*

Ordinary Year

In an ordinary year, the first day of the months are same for

- January and October (1-10)
- April and July (4-7)
- February, March and November (2-3-11)
- September and December (9-12)

Leap Year

In a leap year, the first days of the months are same for

- January, April and July (1 – 4 – 7).
- February and August (2 – 8).
- March and November (3 –11) and September and December (9 – 12).

Leap Year

- A leap year is a year which has 366 days (52 weeks + 2 days) Such years are exactly divisible by 4. *e.g.,* 2004, 2008, 2012, 2016, etc.
- Leap years in the form of a century are exactly divisible by 400. *e.g.,* 400, 800, 1200, 1600, 2000, 2400, etc.
- Last day of a leap year is one day ahead of the first day. e.g., In a leap year, if 1st January, 2004 falls on Monday, then 31st December, 2004 will be on Tuesday.

If a leap year comes immediately after an ordinary year, then the day on a certain date of the leap year will be

- 1 day ahead of the same date of the ordinary year upto February.
- 2 days ahead of the same date of the ordinary year from March to December .

If an ordinary year comes immediately after a leap year, then the day on a certain date of the ordinary year will be

- 2 days ahead of the same date of the leap year upto February.
- 1 day ahead of the same date of the leap year from March to December.

Odd Days

Extra days, apart from complete weeks in a given period are called odd days.

e.g., A period of 7 days = 7 + 0 extra day = 0 odd day
A period of 8 days = 7 + 1 extra day = 1 odd day
A period of 9 days = 7 + 2 extra days = 2 odd days
A period of 10 days = 7 + 3 extra days = 3 odd days
A period of 11 days = 7 + 4 extra days = 4 odd days
A period of 12 days = 7 + 5 extra days = 5 odd days
A period of 13 days = 7 + 6 extra days = 6 odd days
But a period of 14 days = 7 + 7 = 2 complete weeks = 0 odd days

Therefore, to calculate odd number of days in a given period, follow the rule given below

Divide the period by 7 $\left(i.e., \frac{\text{Period}}{7} \right)$

- If $\frac{\text{Period}}{7}$ leaves no remainder, then there is zero odd days.
- If $\frac{\text{Period}}{7}$ leaves any remainder, then that remainder will be the number of odd days.

Let us understand the above rule with the following two cases

Case I Finding number of odd days for 28 days period

7) 28 (4
28
0

No remainder found, so no odd day
A period of 28 Days = (4 × 7 + 0) days = 4 complete weeks + 0 odd day
As, 28 is exactly divisible by 7, hence, it leaves no remainder.
$\therefore$ Number of odd days = 0

Case II Finding number of odd days for 30 days period

7) 30 (4
28
2 odd days

Here, 30 days = (4 × 7 + 2) days = 4 complete weeks + 2 odd days
As, 30 is not exactly divisible by 7, it leaves 2 as remainder.
$\therefore$ Number of odd days = Remainder = 2
The month with 31 days contains (4 × 7 + 3) days = 3 odd days and the month with 30 days contains (4 × 7 + 2) days = 2 odd days.

By following the same rule, number of odd days in each month of the year can be summarised as follows

S. No.	Months	Number of odd days
1.	January	3
2.	February (ordinary year), February (leap year)	0, 1
3.	March	3
4.	April	2
5.	May	3
6.	June	2

S. No.	Months	Number of odd days
7.	July	3
8.	August	3
9.	September	2
10.	October	3
11.	November	2
12.	December	3

Counting of Odd Days

1. Number of days in an ordinary year = 365 days

$$\begin{array}{r|l} 7) & 365\ (52 \\ & \underline{35} \\ & 15 \\ & \underline{14} \\ & 1 \text{ odd day} \end{array}$$

or $365 = 52 \times 7 + 1 = 1$ odd day

So, an ordinary year has 1 odd day.

2. Number of days in a leap year = 366 days

$$\begin{array}{r|l} 7) & 366\ (52 \\ & \underline{35} \\ & 16 \\ & \underline{14} \\ & 2 \text{ odd days} \end{array}$$

or $366 = 52 \times 7 + 2 = 2$ odd days

So, a leap year has 2 odd days.

3. 100 yrs = 76 ordinary years + 24 leap years

∴ Number of odd days in 100 yrs = 76 odd days of 76 ordinary years + (24 × 2) odd days of 24 leap years
= 76 odd days + 48 odd days = 124 odd days

$$\begin{array}{r|l} 7) & 124\ (17 \\ & \underline{7} \\ & 54 \\ & \underline{49} \\ & 5 \text{ odd days} \end{array}$$

$124 = 17 \times 7 + 5 = 5$ odd days

Odd days in 100 yrs = 5 odd days

- Odd days in 200 yrs = (Odd days in 100 yrs) × 2 = 5 × 2 = 10 days = 1 week + 3 days = 3 odd days
- Odd days in 300 yrs = (Odd days in 100 yrs) × 3 = 5 × 3 = 15 days = 2 weeks + 1 day = 1 odd day
- Odd days for 400 yrs = (Odd days in 100 yrs) × 4 + 1 day = (5 × 4 + 1) days = 21 days = 3 weeks = 0 odd day

(i) As 400 yrs is a leap year, therefore 1 more day has been taken.

(ii) Similarly, each one of 800, 1200, 1600, 2000 and 2400 etc., has no odd days.

Now, we can summarise the odd days in centuries as follows

- Odd days in 100 yrs = 5 odd days
- Odd days in 300 yrs = 1 odd days
- Odd days in 200 yrs = 3 odd days
- Odd days in 400 yrs = 0 odd days

K Memory *Add-ons*

- Each day is supposed to begin at mid night.
- Ist January, 01 was Monday.
- The first day of the century must be either Monday, Wednesday, Friday or Saturday.
- The last day of century cannot be Tuesday, Thursday or Saturday.
- The same calendar repeats itself when the sum of odd days between the years months should be zero.

  e.g., 2007 will have the same calendar as that of 2001.

  ∴ Total number of odd days between 2001 and 2007 $= 7 = \frac{7}{7} = 0$ odd days

  Century leap years contain no odd days.
  e.g., 400, 800, 1200, 1600 and 2000 yrs contain no odd days.
- A leap year calendar repeats in 28 yr while the calendar of an ordinary year repeats after 6 or 11 yr. So, whenever you get this type of problem, then there is no need to check all the options. You can eliminate your options by using this.

Ex **1** Which year will have the same calendar as that of 2012?

(a) 2020 (b) 2040 (c) 2025 (d) 2031

Sol. (*b*) Since, 2012 is a leap year.

∴ 2012 + 28 = 2040 (as we know that, a leap year repeats itself after 28 yr)

So, year 2040 will have the same calendar a that of 2012.

Ex **2** Which of the given years will have the same calendar as that of year 2003? **[SSC (10+2) 2008]**

(a) 2013 (b) 2014 (c) 2015 (d) 2016

Sol. (*b*) To have the same calendar as that year 2003, we must have 0 odd days between 2003 and the required year.

Year →	2003	2004	2005	2006	2007	2008
Odd day	1	2	1	1	1	2
Year →	2009	2010	2011	2012	2013	
Odd day	1	1	1	2	1	

Total odd days = 1 + 2 + 1 + 1 + 1 + 2 + 1 + 1 + 1 + 2 + 1 = 14 odd days = 2 complete weeks or 0 odd day

Therefore, calendar for the year 2014 will be same as that of year 2003.

There are mainly three types of questions which are generally asked from this chapter in various competitive exams

Type 1 Finding the Day on a Particular Date When Reference Day is Given

In this type of questions, a particular day and its date is given. On the basis of that the candidate has to find out the day on a given date.

Step I Find the net number of odd days between the reference date and the date for which the day is to be determined (exclude the reference day but count the given day for counting the number of net odd days).

Step II The day of the week on the particular date is equal to the number of net odd days ahead of the reference day, if the reference day was before this date. But if the reference day was ahead of this date, then the day of the week on the particular date is equal to number of odd days before the reference day.

Ex **3** If 15th August, 2011 was Monday, what day of the week was on 17th September, 2011?

(a) Saturday (b) Sunday (c) Friday (d) Thursday

Sol. (*a*) Here, total days in August, 2011 = 31 − 15 = 16

and total days in September, 2011 (1st to 17th) = 17

Total days = 33

$$\therefore \quad 33 \div 7 = 7)\,33\,(4 \qquad \frac{28}{5}$$

33 days = (4 × 7 + 5) days = 4 weeks + 5 odd days

∴ Number of odd days = 5

Required day = Monday + 5 = Saturday

Ex **4** If 5th January, 1991 was Saturday, then what day of the week was it on 4th March 1992? **[MAT 2009]**

(a) Monday (b) Wednesday (c) Friday (d) Sunday

Sol. (*b*) **Method I**

Number of days in 1991 (365 – 5) = 360

Number of days in January 1992 = 31

Number of days in February 1992 = 29 (Leap year)

Number of days from 1st to 4th March 1992 = 4

∴ Total days = 360 + 31 + 29 + 4 = 424

∴ $424 \div 7 = 7) 424 (60$

$$\begin{array}{r} 42 \\ \hline 4 \end{array}$$

∴ 424 days = (60 × 7 + 4) days = 60 weeks + 4 days

∴ Number of odd days = 4

∴ Day on 4th March, 1992 = Saturday + 4 = Wednesday

➘ 29 days have been taken in February as 1992 is exactly divisible by 4 and hence it is a leap year.

Method II

(By finding odd days for every segment)

Number of odd days in 1991 for (365 – 5 = 360) = 3 (360 = 51 × 7 + 3)

Number of odd days in January 1992 = 3

Number of odd days in February 1992 = 1 (Leap year)

Number of odd days from 1st to 4th March, 1992 = 4

∴ Total odd days = 3 + 3 + 1 + 4 = 11 = 1 week + 4 days = 4 odd days

∴ Required day = Saturday + 4 = Wednesday

Method III

(By finding odd days for every month)

Month	Number of odd days
January 1991	5 (for 31 – 5 = 26 days)
February 1991	0 (Ordinary year)
March 1991	3
April 1991	2
May 1991	3
June 1991	2
July 1991	3
August 1991	3
September 1991	2
October 1991	3
November 1991	2
December 1991	3
January 1992	3
February 1992	1 (Leap year)
March 1992	4 (from 1st to 4th March 1992)
Total	39

∴ $39 \div 7 = 7) 39 (5$

$$\begin{array}{r} 35 \\ \hline 4 \end{array}$$

∴ 39 days = (5 × 7 + 4) days = 5 weeks + 4 days

∴ Number of odd days = 4

∴ Required day = Saturday + 4 = Wednesday

Practice Corner **13.1**

Build your Confidence...

1. If 1st January, 2001 was Monday, then what day of the week was it on 31st December, 2001?
(a) Wednesday (b) Friday (c) Monday (d) Saturday

2. If 1st day of a year which is not a leap year is Friday, then find the last day of that year, **[UP B.Ed. 2012]**
(a) Sunday (b) Friday (c) Monday (d) Wednesday

3. First day of a leap year is Wednesday, then what day of the week was it on 31st December in that year?
(a) Thursday (b) Saturday (c) Monday (d) Friday

4. If 1st January, 2007 was Monday, then what day of the week lies on 1st January, 2008?
(a) Monday (b) Tuesday (c) Wednesday (d) Sunday

5. If 1st January, 2008 is Tuesday, then what day of the week lies on 1st January, 2009?
(a) Monday (b) Wednesday (c) Thursday (d) Sunday

6. Find the number of days from 26th January, 2011 to 23rd September, 2011 (both days are included). **[SSC (CGL)2011]**
(a) 214 (b) 241 (c) 249 (d) 251

7. If 4th Saturday of a month was 22nd day, then what was the 13th day of that month?
(a) Tuesday (b) Wednesday (c) Thursday (d) Friday

8. If 15th June falls on 3 days after tomorrow which is Friday, then what day of week will fall on last date of month?
(a) Monday (b) Tuesday (c) Wednesday (d) Thursday

9. If the national day of a country was celebrated on the 4th Saturday of a month, then find the date of celebration, when the first day of that month is Tuesday. **[SSC (CPO) 2011]**
(a) 24th (b) 25th (c) 26th (d) 27th

10. If 26 January, 2011 was Wednesday, then what day of the week was it on 26th January,2012?
(a) Monday (b) Tuesday (c) Wednesday (d) Thursday

11. If 15th August, 2011 was Tuesday, then what day of the week was it on 17th September, 2011?
(a) Thursday (b) Friday (c) Saturday (d) Sunday

12. If Republic day was celebrated in 1996 on Friday, on which day in 2000 Independence day was celebrated? **[SSC (CGL) 2012]**
(a) Monday (b) Tuesday (c) Wednesday (d) Saturday

13. If the third day of a month is Moday, then which of the following will be the fifth day from 21st of that month? **[MAT 2014]**
(a) Tuesday (b) Monday (c) Wednesday (d) Thursday

14. If it was Saturday on December 17, 1899, then what will be the day on December 22, 1901? **[RPSC 2013]**
(a) Friday (b) Saturday (c) Sunday (d) Monday

15. If 27 March, 1995 was a Monday, then what day of the week was 1 November, 1994? **[MAT 2013]**
(a) Sunday (b) Monday (c) Tuesday (d) Wednesday

Response & Interpretations **(13.1)**

1. (*c*) Year 2001 was an ordinary year and in an ordinary year
1st day = Last day (remember)
1st January = 31st December
As, given that, 1st January = Monday
Hence, 31st December = Monday

2. (*b*) As we know that, first and last day of an ordinary year is same.
∵ 1st day = Friday ⇒ Last day = Friday

3. (*a*) In a leap year, Last day = 1st day + 1 odd day (remember)
As given, 1st day = Wednesday
∴ Last day = Wednesday + 1 odd day = Thursday

4. (*b*) 2007 is an ordinary year and in an ordinary year
1st January = 31 st December
As, 1st January = Monday
∴ 31st December = Monday
∴ 1st January, 2008 = Monday + 1 odd day
= Tuesday

5. (*c*) Since, 2008 is leap year.
In a leap year, last day = 1 st day + 1 odd day
= Tuesday + 1 odd day
= Wednesday
= 31 st December
∴ 1st January, 2009 = Wednesday + 1 odd day = Thursday

6. (*b*) According to the question,
26th January to 31st January = 6 days
February = 28 days
March = 31 days
April = 30 days
May = 31 days
June = 30 days
July = 31 days
August = 31 days

1st September to 23rd September = 23 days
Total days = 241
∴ Required days = 241

7. (*c*) 4th Saturday = 22nd day
3rd Saturday = 22 − 7 = 15 th day
∴ 13th day = Saturday − 2 = Thursday

8. (*b*) Tomorrow = Friday
3 days after tomorrow = 15 th June = Friday + 3 odd days
= Monday
Days from 15th to 30th June = 15
15 ÷ 7 = 7)15(2
14
1 odd day
30th June = Monday + 1 odd day = Tuesday

9. (*c*) According to the question,
National day = 4 th Saturday
∵ 1st day = Tuesday
∴ 1st Saturday = Tuesday + 4 = 1 + 4 = 5 th day
∴ 2nd Saturday = 5 + 7 = 12 th day
3rd Saturday = 12 + 7 = 19 th day
4th Saturday = 19 + 7 = 26 th day
So, National day was celebrated on 26th of that month.

10. (*d*) 26th January, 2011 to 26th January, 2012 will be considered as an ordinary year because 26th January in 2012 (a leap year) comes before 29th February. Hence, the period of this one year will have only 1 odd day.
∵ 26th January 2011 = Wednesday
∴ 26th January 2012 = Wednesday + 1 odd day
= Thursday

11. (*d*) ∵ Total days from 15th August, 2011 to 17 September, 2011
= 33
33 ÷ 7 = 7)33(4
28
5 odd days
∴ Required day = Tuesday + 5 odd days = Sunday

12. (*d*) Number of days in 1996 (366-26) = 340
Number of days in 1997 = 365
Number of days in 1998 = 365
Number of days in 1999 = 365
Number of days from January 2000 to July 2000
= 31 + 29 + 31 + 30 + 31 + 30 + 31 = 213
Number of days from 1st to 15th August, 2000 = 15
∴ Total days = 340 + 365 + 365 + 365 + 213 + 15 = 1663
∴ 1663 ÷ 7 7) 1663 (237
14
26
21
53
49
4
∴ 1663 days = (237 × 7 + 4) days = 237 weeks + 4 days
∴ Number of odd days = 4
∴ Day on 15th August, 2000 = Friday + 4 odd days
= Tuesday

13. (*c*) Fifteen day from 21st will be 26th and Monday lies on 3rd, 10th, 17th, 24th. So, the day on 26th will be Wednesday.

14. (*b*) ∵ December 17, 1899 — Saturday
December 17, 1900 — Sunday
December 18, 1901 — Tuesday
∴ December 22, 1901 — Saturday

15. (*c*) Here, 27th March, 1995 was Monday. Now, for calculating total number of odd days. first, we calculate total number of days till 1 November, 1994.
∴ Number of days in March, 1995 = 27
Number of days in February, 1995 = 28
Number of days in January, 1995 = 31
Number of days in December, 1994 = 31
Number of days in November 1994 = 29
146
∴ Number of odd days = $\frac{146}{7} = 20\frac{6}{7}$
So, 6 odd days.
∴ On November 1, 1994 = Monday − 6 = Tuesday

Type 2 Finding the Day on a Particular Date When Reference Day is not Given

To find the day on a particular date when reference day is not given we have to follow the following steps.

Step I Find the net number of odd days upto the date for which the day is to be determined.

Step II Write the name of the day according to the number of odd days as given below

If odd day = 0, then required day = Sunday
If odd day = 1, then required day = Monday
If odd days = 2, then required day = Tuesday
If odd days = 3, then required day = Wednesday
If odd days = 4, then required day = Thursday
If odd days = 5, then required day = Friday
If odd days = 6, then required day = Saturday

Ex 5 Find the day of the week on 26th January 1950.

(a) Friday (b) Thursday (c) Monday (d) Saturday

Sol. (*b*) Odd days for 1600 yrs = 0

Odd days for 300 yrs = 1

Odd days for 49 yr = $(12 \times 2 + 37 \times 1) = 61$ (since, there are 12 leap years and 37 ordinary years in the period of 49 yr)

Odd days for 26 days of Jan 1950 = 5

∴ Total odd days = 0 + 1 + 61 + 5 = 67 days

∴ 67 ÷ 7 = 7)67(9

63

4

i.e., 67 days = $(9 \times 7 + 4)$ days = 9 weeks + 4 days

∴ Number of odd days = 4

∴ Required day = Thursday

Ex 6 What was the day of the week on 4th June, 2002?

(a) Tuesday (b) Monday (c) Friday (d) Saturday

Sol. (*a*) Odd days for 1600 yrs = 0

Odd day for 400 yrs = 0

Odd days for 1 ordinary year = 1

Odd days for period for 1st January, 2002 to 4th June, 2002 = Jan Feb March April May June

3 + 0 + 3 + 2 + 3 + 4 = 15

∴ Total odd days = 1 + 15 = 16 = 2 weeks + 2 days = 2 odd days

∴ Required day = Tuesday

Practice Corner **13.2**

Build your Confidence...

1. What day of the week was on 1st January, 2001?

(a) Wednesday (b) Tuesday
(c) Monday (d) Sunday

2. What was the day of the week on 1st April, 1901?

(a) Sunday (b) Monday
(c) Wednesday (d) Saturday

3. What was the day of the week on 15th August, 1947?

(a) Friday (b) Monday
(c) Saturday (d) Sunday

4. What was the day of the week on 28th May, 2006?

(a) Thursday (b) Friday
(c) Saturday (d) Sunday

5. What was the day of the week on 30th June, 1980?

(a) Friday (b) Wednesday
(c) Monday (d) Saturday

6. On which day of the week does 28th August, 2009 fall?

(a) Sunday (b) Monday
(c) Tuesday (d) Friday

7. What day of the week was on 15th August, 1949?

(a) Monday (b) Tuesday
(c) Thursday (d) Saturday

8. On which day of the week does 18th September, 1991 fall?

(a) Wednesday (b) Tuesday
(c) Friday (d) Saturday

9. Ashu was born on August 19,1992 what day of the week was the born?

(a) Sunday (b) Monday
(c) Tuesday (d) Wednesday

10. On which dates of April, 2012 will a Sunday come?

(a) 5, 12, 19, 26
(b) 1, 8, 15, 22, 29
(c) 3, 10, 17, 24
(d) 7, 14, 21, 28

11. What was the day on Ist January, 1901? **[CMAT 2014]**

(a) Monday (b) Wednesday
(c) Sunday (d) Tuesday

Response & Interpretations **(13.2)**

1. (*c*) 1st January, 2001 means 2000 complete years + 1 day of January, 2001.

Number of odd days in 2000 yrs = 0

Number of odd days in January, 2001 = 1

Total number of odd days = 0 + 1 = 1

So, the required day was Monday.

2. (*b*) 1st April, 1901 means 1900 complete years + first 3 months of 1901 + 1 day of April

Number of odd days in 1600 yrs = 0

Number of odd days in 300 yrs = 1

Number of odd days in 1901 yrs

January	February	March	April
3	0	3	1

$= 3 + 0 + 3 + 1 = 7 \Rightarrow$ 0 odd days

Total number of odd days till 1st April, 1901 = $0 + 1 + 0 = 1$

So, the required day was Monday.

3. (*a*) Odd days in 1600 yrs = 0

Odd days in 300 yrs = 1

46 yrs = (11 leap year + 35 ordinary year)

$= (11 \times 2 + 35 \times 1)$

= 1 odd day

∴ Odd days in 1946 yrs = $(0 + 1 + 1) = 2$

Month	Odd days
January	3
February	0 (ordinary year)
March	3
April	2
May	3
June	2
July	3
August	1 $(15 \div 7)$
Total	17

$17 \div 7 = 7)17(2$

$\underline{14}$

3 odd days

Total odd days = $2 + 3 = 5$

∴ Required day = Friday

4. (*d*) Odd days in 1600 yrs = 0

Odd days in 400 yrs = 0

5 yrs = (4 ordinary year + 1 leap year)

$= (4 \times 1 + 1 \times 2)$

= 6 odd days

Month	January	February	March	April	May	Total
Odd days	3	0	3	2	0 $(28 \div 7)$	8

Total odd days = $8 + 6 = 14 = 0$ odd day

∴ Required day = Sunday

5. (*c*) 30th June, 1980 means 1979 complete years + 6 months of 1980

Number of odd days in 1600 yrs = 0

Number of odd days in 300 yrs = 1

Number of odd days in 79 yrs

= (19 leap yrs + 60 ordinary years)

$= 19 \times 2 + 60 \times 1$

$= 38 + 60$

$= 98 \Rightarrow$ 0 odd days

January	February	March	April	May	June
3	1	3	2	3	2

Number of odd days in 1980 = $3 + 1 + 3 + 2 + 3 + 2$

$= 14 \Rightarrow$ 0 odd days

Total number of odd days till 30th June, 1980

$= 0 + 1 + 0 + 0 = 1$

So, the required day was Monday.

6. (*d*) 28th August, 2009 means 2008 complete years + First 7 months of year 2009 + 28 days of August

Number of odd days in 2000 yrs = 0

Number of odd days from 2001 yrs to 2008 yrs

Year	Number of odd days
2001	1
2002	1
2003	1
2004	2
2005	1
2006	1
2007	1
2008	2

$= 1 + 1 + 1 + 2 + 1 + 1 + 1 + 2$

$= 10 = 7 \times 1 + 3$

= 3 odd days

Number of odd days in 2009,

January	3
February	0
March	3
April	2
May	3
June	2
July	3
August	0

$= 3 + 0 + 3 + 2 + 3 + 2 + 3 + 0$

$= 16 = 7 \times 2 + 2$

= 2 odd days

Total number of odd days till 28th August, 2009

$= 0 + 3 + 2 = 5$

So, the required day is Friday.

7. (*a*) 15th August, 1949 means,
1948 complete year + First 7 months of the years 1949 + 15 days of August
Number of odd days in 1600 yrs = 0
Number of odd days in 300 yrs = 1
Number of odd days in 48 yr
(36 non-leap years + 12 leap years)
$= 36 \times 1 + 12 \times 2 = 60 = 7 \times 8 + 4 = 4$ odd days
From 1st January, 1949 to 15th August, 1949
Number of odd days in 1949,

January	3
February	0
March	3
April	2
May	3
June	2
July	3
August	$(15 \div 7) = 1$

Total number of odd days in 1949
$= 3 + 0 + 3 + 2 + 3 + 2 + 3 + 1 = 17$
$= 7 \times 2 + 3 = 3$ odd day
Total odd days $= 1 + 4 + 3 = 8 = 1$ odd days
Since, 1 is the code for Monday. Therefore, the required day was Monday.

8. (*a*) 18th September, 1991 means 1990 complete years + 8 months of 1991 + 18 days of September
Number of odd days in 1600 yrs = 0
Number of odd days in 300 yrs = 1
Number of odd days in 90 yrs
(22 leap years + 68 ordinary years)
$= 22 \times 2 + 68 \times 1$
$= 44 + 68 = 112 \Rightarrow 0$ odd days
Number of odd days in 1991,

January	3
February	0
March	3
April	2
May	3
June	2
July	3
August	3
September	4

$= 3 + 0 + 3 + 2 + 3 + 2 + 3 + 3 + 4$
$= 23 = 7 \times 3 + 2 \Rightarrow 2$ odd days
Total number of odd days till 18th September, 1991
$= 0 + 1 + 0 + 2 = 3$
So, the required day was Wednesday.

9. (*d*) 19th August, 1992 means 1991 complete years + First 7 months of 1992 + 19 days of August
Number of odd days in 1600 years = 0
Number of odd days in 300 yrs = 1
Number of odd days in 91 yrs
(22 leap year + 69 non-leap years)
$= 22 \times 2 + 69 \times 1 = 44 + 69$
$113 = 7 \times 16 + 1$
$= 1$ odd day
From 1st January, 1992 to 19th August, 1992 Number of odd days in 1992,

January	3
February	1
March	3
April	2
May	3
June	2
July	3
August	5

$= 3 + 1 + 3 + 2 + 3 + 2 + 3 + 5$
$= 22$
$= 7 \times 3 + 1$
$= 1$ odd day
∴ Number of odd days till 19th August, 1992
$= 0 + 1 + 1 + 1$
$= 3$
So, the required day was Wednesday.

10. (*b*) First of all, we have to find the day on 1st April, 2012 1st April 2012 means (2011 years 3 months and 1 day)
Now, 2000 years have 0 odd days
11 years have (2 leap years and 9 ordinary years)
$= (2 \times 2 + 9 \times 1)$ odd days
$= (4 + 9)$ odd days
$= 13 = 6$ odd days
3 months and 1 day

January	February	March	April
1	29	31	1

= 92 days = 1 odd day
Total number of odd days $= (6 + 1) = 7 \Rightarrow 0$ odd day
Hence, it was Sunday on 1st April 2012. (1st Sunday).
Subsequently, Sundays of the month were on Ist, 8th, 15nd, 22nd, and 29th.

11. (*d*) 1st January, 1901 means = (1900 yrs and 1 day)
Now, 1600 yrs have 0 odd day, 300 yrs have 1 odd day and 1 day has 1 odd day.
Total number of odd days $= 0 + 1 + 1 = 2$ days
Therefore, the day on 1st January, 1901 was Tuesday.

Type 3 Finding a Week Day on the Basis of Another Week Day

In such questions, a week day is to be found out on the basis of some reference day of the week.

Important Concepts Regarding Days

(i) Yesterday = Today – 1 day
(ii) Tomorrow = Today + 1 day
(iii) Day after yesterday = Today
(iv) Day before yesterday = Today – 2 days
(v) Day after tomorrow = Today + 2 days
(vi) Day before tomorrow = Today
(vii) Day after the day before yesterday = (Yesterday – 1 day) + 1 day = Yesterday = Today – 1 day
(viii) Day before the day after tomorrow = (Tomorrow + 1 day – 1 day = Tomorrow = Today + 1 day
(ix) Day before the day after yesterday = (Yesterday + 1 day) – 1 day = Yesterday = Today – 1 day
(x) Day after the day before tomorrow = (Tomorrow – 1 day) + 1 day = Tomorrow = Today + 1 day

Ex 7 If today is Sunday, then what day of the week will be 3 days after tomorrow?
(a) Thursday (b) Wednesday (c) Saturday (d) Friday

Sol. (a) Today = Sunday
Tomorrow = Sunday + 1 = Monday
3 days after tomorrow = Monday + 3 odd days = Thursday

Practice Corner 13.3

Build your Confidence...

1. 2 days before yesterday was Friday, then what day of the week will be day after tomorrow?
(a) Monday (b) Sunday (c) Saturday (d) Wednesday

2. If a day before yesterday was Thursday, then when will Sunday fall? **[SSC (10+2) 2010]**
(a) Today (b) 2nd day after today
(c) Tomorrow (d) A day after tomorrow

3. If day after tomorrow is Tuesday, then what day of the week will it be on 2 days after the day after tomorrow?
(a) Monday (b) Wednesday (c) Saturday (d) Thursday

4. If day before yesterday was Thursday, then when will be the Monday? **[UP B.Ed. 2011]**
(a) Day after tomorrow (b) Today
(c) Tomorrow (d) Two days after days

5. If a day before yesterday was Wednesday, then when will Sunday fall? **[SSC (10+2) 2010]**
(a) 3rd days after today (b) Tomorrow
(c) Today (d) A day after tomorrow

6. If Tuesday falls 3 days after today, then what day of the week was it on 4 days before yesterday?
(a) Monday (b) Tuesday
(c) Wednesday (d) Sunday

7. If Thursday falls 2 days after tomorrow, then what day of the week was it on three days before yesterday?
(a) Monday (b) Tuesday
(c) Wednesday (d) Thursday

8. If day after tomorrow is Sunday, then what day of the week was it on day before yesterday?
(a) Wednesday (b) Friday (c) Saturday (d) Monday

9. If a day before yesterday was Tuesday, then what day of the week will it be on a day after tomorrow?
(a) Monday (b) Wednesday
(c) Friday (d) Saturday

10. If day before yesterday was Saturday, then what day of the week will it be after tomorrow?
(a) Friday (b) Thursday
(c) Wednesday (d) Tuesday

11. Sudha went to watch movie 9 days ago. She goes to watch movies only on Thursday, What is the day of the week today? **[SSC (CPO) 2011]**

(a) Thursday (b) Saturday
(c) Sunday (d) Monday

12. Anil reaches at a certain place on Friday and found he reaches the place 3 days before. If he had reached the place on coming Sunday, then how many days before or after he would have reached the place?

(a) One day before (b) One day after
(c) 2 days after (d) 2 days before

13. The day before the day before yesterday is three days after Saturday. What day is it today? **[IB (ACIO) 2013]**

(a) Tuesday (b) Wednesday (c) Thursday (d) Friday

14. If the day before yesterday was Wednesday, when will Sunday be? **[SSC (10+2) 2013]**

(a) Today (b) Tomorrow
(c) Day after tomorrow (d) Two days after tomorrow

15. If January 1 is a Friday, then what is the first day of the month of March in a leap year? **[SSC (10+2) 2013]**

(a) Tuesday (b) Wednesday (c) Thursday (d) Friday

Response & Interpretations **(13.3)**

1. (*d*) 2 days before yesterday = Friday
∴ Yesterday = Friday + 2 = Sunday
∴ Today = Sunday + 1 = Monday
∴ Day after tomorrow = Monday + 2 = Wednesday

2. (*c*) A day before yesterday = Thursday
Yesterday = Thursday + 1 = Friday
Today = Friday + 1 = Saturday
∴ Sunday = Saturday + 1 = Tomorrow

3. (*d*) A day after tomorrow = Tuesday
∴ Two days after the day after tomorrow
= Tuesday + 2 = Thursday

4. (*a*) Day before yesterday = Thursday
∴ Today = Thursday + 2 = Saturday
∴ Monday = Saturday + 2 = Day after tomorrow

5. (*d*) A day before yesterday = Wednesday
Yesterday = Wednesday + 1 = Thursday
Today = Thursday + 1 = Friday
∴ Sunday = Friday + 2 = Day after tomorrow.

6. (*a*) Three days after today = Tuesday
Today = Tuesday – 3 = Saturday
Yesterday = Saturday – 1 = Friday
∴ 4 days before yesterday = Friday – 4 = Monday

7. (*d*) Two days after tomorrow = Thursday
Tomorrow = Thursday – 2 = Tuesday
Today = Tuesday – 1 = Monday
Yesterday = Monday – 1 = Sunday
∴ 3 days before yesterday = Sunday – 3 = Thursday

8. (*a*) Day after tomorrow = Sunday
Tomorrow = Sunday – 1 = Saturday
Today = Saturday – 1 = Friday
Yesterday = Friday – 1 = Thursday
∴ Day before yesterday = Thursday – 1 = Wednesday

9. (*d*) A day before yesterday = Tuesday
Yesterday = Tuesday + 1
= Wednesday
Today = Wednesday + 1
= Thursday
Tomorrow = Thursday + 1 = Friday
∴ Day after tomorrow = Friday + 1
= Saturday

10. (*c*) Day before yesterday = Saturday
Today = Saturday + 2 = Monday
∴ Tomorrow = Monday + 1 = Tuesday
∴ Day after Tomorrow = Tuesday + 1
= Wednesday

11. (*b*) Day 9 days ago = Thursday
∴ Today = Thursday + 9 = Thursday + 7 + 2
= Thursday + 2
= Saturday

12. (*a*) The correct day on which Anil has to reach the place = Friday + 3 = Monday. Therefore, if Anil reaches on Sunday, then he reaches there on the day which is (Monday – 1) or 1 day before the correct day.

13. (*d*) Three days after Saturday is Tuesday
and Tuesday is a day before a day before yesterday
So, yesterday is Thursday and today is Friday.

14. (*c*) If the day before yesterday was Wednesday, then today will be Friday and the day after tomorrow will be Sunday.

15. (*a*) Total number of days from January 1 to March 1
= 30 + 29 + 1
= 60 days
(February in a leap years = 29 days)
60 ÷ 7 = 8 weeks and 4 odd days
So, the fourth day from Friday = Tuesday

Master Exercise

Take a Leap...

1. If day before yesterday was Saturday, then what day of the week will it be on day after tomorrow?
(a) Friday
(b) Thursday
(c) Wednesday
(d) Tuesday

2. Today is Monday, it will be ...... after 61 days.
(a) Wednesday
(b) Saturday
(c) Tuesday
(d) Thursday

3. Today is Thursday. The day after 59 days will be
(a) Sunday
(b) Monday
(c) Tuesday
(d) Wednesday

4. If today is Friday, then the day after 63 days will be
(a) Friday
(b) Thursday
(c) Saturday
(d) Monday

5. Which of the following is a leap year? **[CG PSC 2013]**
(a) 2800
(b) 1800
(c) 2600
(d) 3000
(e) All of these

6. How many Monday's are there in a particular month of a particular year, if the month ends on Wednesday? **[SNAP 2012]**
(a) 4
(b) 5
(c) 3
(d) Cannot be specified

7. The year next to 1990 which have the same calendar as that of the year 1990 is
(a) 1995
(b) 1997
(c) 1996
(d) 1992

8. A girl was born on September 6, 1970 which happened to be a Sunday. Her birthday would have fallen again on Sunday in **[UP PSC 2012]**
(a) 1975
(b) 1977
(c) 1981
(d) 1982

9. If Monday falls on the first of October which day will fall three days after the 20th in that month? **[UP PSC 2013]**
(a) Monday
(b) Tuesday
(c) Wednesday
(d) Sunday

10. The last day of a century cannot be either. **[MAT 2013]**
I. Tuesday II. Thursday III. Saturday IV. Sunday
(a) Monday
(b) Wednesday
(c) Tuesday
(d) Friday

11. In a month of 31 days, third Thursday falls on 16th, then what will be the last day of the month? **[CG PSC 2013]**
(a) 5th Friday
(b) 4th Saturday
(c) 5th Wednesday
(d) 5th Thursday
(e) None of these

12. On 6th March, 2005 Monday falls. What day of the week was it on 6th March, 2004?
(a) Sunday
(b) Thursday
(c) Tuesday
(d) Saturday

13. If the Republic day of India in 1980, falls on Saturday, X was born on March 3,1980 and Y is older to X by four days, then Y's birthday fell on **[IB (ACIO) 2013]**
(a) Thursday
(b) Friday
(c) Wednesday
(d) None of these

14. What was the day on 1st January, 1901?
(a) Monday
(b) Wednesday
(c) Sunday
(d) Tuesday

15. What was the day on 31st October, 1984?
(a) Friday
(b) Sunday
(c) Wednesday
(d) Monday

16. What was the day on 14th March, 1993?
(a) Friday
(b) Thursday
(c) Sunday
(d) Saturday

17. What was the day of the week on 2nd July, 1984?
(a) Wednesday
(b) Tuesday
(c) Monday
(d) Thursday

18. On what dates of August, 1980 did Monday fall?
(a) 4th, 11th, 18th and 25th
(b) 3th, 10th, 17th and 24th
(c) 6th, 13th, 20th, and 27th
(d) 9th, 16th, 23rd and 30th

19. On what dates of December,1984 did Sunday fall?
(a) 6th , 13th, 20th and 27th
(b) 7th , 14th, 21st and 28th
(c) 2nd , 9th, 16th, 23rd and 30th
(d) 1st , 8th, 15th and 22nd

20. The day on 18.09.1977 was Sunday A couple was married on this date.How many marriage anniversaries would fall on Sunday in the next 15 yr? **[UP PSC 2013]**
(a) 1
(b) 2
(c) 5
(d) 9

Response & Interpretations (Master Exercise)

1. (*c*) Day before yesterday = Saturday
Yesterday = Saturday + 1 = Sunday
Today = Sunday + 1 = Monday
Tomorrow= Monday +1= Tuesday
Day after Tomorrow = Tuesday + 1 = Wednesday

2. (*b*) Today = Monday
Number of odd days = 61 ÷ 7 = 7) 61 (8
$\underline{56}$
5 odd days
∴ Required day = Monday + 5 = Saturday

3. (*a*) 59 ÷ 7 = 7)59(8
$\underline{56}$
3 odd days
Today = Thursday
Number of odd days = 3
∴ Required day = Thursday + 3 = Sunday

4. (*a*) Today = Friday
Number of odd days = 0
63 ÷ 7 = 7)63(9
$\underline{63}$
0 odd days
∴ Required day = Friday + 0 = Friday

5. (*a*) The century year which is completely divisible by 400, is a leap year. Thus, the year 2800 is a leap year.

6. (*d*) There are months of 30, 31 and 28 days and last day of month is Wednesday.
So, using 28 and 30 days, there are 4 Mondays.
Using 31 days, there are 5 Mondays.
So, it cannot be specified

7. (*c*) The year 1990 has 365 days *i.e.*, 1 odd day, year 1991 has 365 days *i.e.,* 1 odd day,year 1992 has 366 days *i.e.,* 2 odd days. Likewise year 1993, 1994, 1995, have 1 odd day each. The sum of odd days, so calculated from years 1990 to 1995 (1 + 1 + 2 + 1 + 1 + 1)
= 7 odd days = 0 odd day
Hence, the year 1996 will have the same calendar as that of the year 1990.

8. (*c*) 1970 is an ordinary year. We know that the calendar of an ordinary year repeats after 6 yrs or 11 years.
6 yrs after 1970 is 1976 and 11 yrs after 1970 is 1981. In the given options, we have only year 1981.
So, we can easily eliminate rest of the options. Now, it is clear that her birthday would fall again on Sunday in 1981.

9. (*b*) Here, 1st October is Monday.
Three days after 20th of that month is 23rd October.
Number of days between 1st October and 23rd October
= 22
Number of odd days = $\frac{22}{7}$ = 1 odd day
∴ Required day = Monday +1 odd day
= Tuesday

10. (*c*) The last day of century cannot be Tuesday or Thursday or Saturday.

11. (*a*) Number of days left in the month after 16th = 31 – 16 = 15
Number of odd days = $\frac{15}{7}$ = 2 weeks + 1 odd day
∴ Required day = Thursday + 1 odd day = Friday
As, 16th of the month is third Thursday,the day which is two weeks after this day is fifth Thursday. So, one day after 5th Thursday is 5th Friday.

12. (*d*) Total days from 6th March 2004 to 6th March 2005 = 366 days (since 2004 was a leap year)
366 ÷ 7 = 7)366(52
$\underline{35}$
16
$\underline{14}$
2 odd days
odd days = 2
∴ Required day = Monday – 2 = Saturday

13. (*b*) Republic day in 1980 *i.e.,* January 26, 1980 = Saturday
Number of odd days till March 3, 1980
January February March
↓ ↓ ↓
5 29 3 → 37 odd days
or $\frac{37}{7}$ = 2 odd days
So, March 3 is Monday and Y is 4 day older to X. So, his birthday must be four days ahead of X *i.e.,* on Friday.

14. (*d*) 1st January, 1901 means (1900 years and 1 day)
Now, 1600 yrs have 0 odd day
300 yrs have 1 odd day
1 day has 1 odd day
Total number of odd days = 0 + 1 + 1 = 2 days
Hence, the day on 1st Jan, 1901 was Tuesday.

15. (*c*) 31st October, 1984 means (1983 yrs and 10 months)
Now, 1600 yrs have 0 odd day
300 yrs have 1 odd day
83 yr have 20 leap years and 63 ordinary years
= (20 × 2 + 63 × 1) odd days = (40 + 63) odd days
= (103 odd days) *i.e.,* 5 odd days
10 months of the year 1984 have 305 days.
(February is of 29 days, being the month of leap year).
305 days have 43 weeks and 4 odd days.
Total number of odd days = (0 + 1 + 5 + 4)
= 10 odd days or 3 odd days
Hence, it was Wednesday on 31st October, 1984.

16. (*c*) 14th March, 1993 means (1992 yrs, 2 months and 14 days)
Now, 1900 years have 1 odd day,
92 yr have 23 leap years and 69 ordinary years
= (23 × 2 + 69 × 1) odd days
= odd days (46 + 69) = 115 days
= 3 odd days
2 months + 14 days = 31 + 28 + 14 = 73 = 3 odd days
Total number of odd days = (1 + 3 + 3) = 7 *i.e.,* 0 odd days
Hence, it was Sunday on 14th March, 1993.

17. (*c*) 2nd July, 1984 means (1983 yrs, 6 months and 2 days)

1900 yrs have 1 odd day.

83 years have 20 leap years and 63 ordinary years

= (40 + 63) odd days

= 103 = 5 odd days

Jan	Feb	March	April	May	June	July
31	29	31	30	31	30	2

= 184 days = 2 odd days

Total number of odd days = (1 + 5 + 2)

= 8 odd days

= 1 odd day

Hence, it was Monday on 2nd July, 1984.

18. (*a*) First of all, we have to find the day on 1st August, 1980.

1st August, 1980 means (1979 yrs, 7 months and 1 day)

Now, 1900 yrs have 1 odd day

79 yrs have 19 leap years and 60 ordinary years,

which have $(19 \times 2 + 60 \times 1) = 98$ odd day = 0 odd day

7 months and 1 day

Jan	Feb	March	April	May	June	July	August
31	29	31	30	31	30	31	1

= 214 days = 4 odd days

Total number of odd days = (1 + 4) = 5

So, it was Friday on 1 st August, 1980 and 1st Monday of the month was on 4th and subsequent Mondays of the month were on 4th, 11th, 18th and 25th.

19. (*c*) First of all, we have to find the day on 1st December, 1984.

1st December, 1984 means (1983 yrs 11 months and 1 day)

Now, 1900 yrs have 1 odd day

83 yrs have (20 leap years and 63 ordinary years)

= (40 + 63) odd days

= 103 odd days

= 5 odd days

11 months and 1 day

Jan	Feb	March	April	May	June	July	August
31	29	31	30	31	30	31	31

Sep	Oct	Nov	Dec
30	31	30	1

= 336 days ⇒ 0 odd day

Total number of odd days = (1 + 5 + 0) = 6

Hence, it was Saturday on 1st December, 1984 and 1st Sunday was on 2nd December, 1984. Subsequently, Sundays of the month were on 2nd, 9th, 16th, 23rd and 30th.

20. (*b*) 1977 is an ordinary year. We know that the calendar of an ordinary year repeats after 6 yrs or 11 yrs. Let us check for the number of odd days in 6th and 11th years.

Year	**Number of odd days**
1978	1
1979	1
1980	2
1981	1
1982	1
1983	1
1984	2

Year	1985	1986	1987	1988
Number of odd days	1	1	1	2

From the above table,

Number of odd days from 18.09.1977 to 18.09.1983 = 7, *i.e.,* 0 odd day

It means that in 1983, 18th September would fall on Sunday.

From the above table, number of odd days from 18.09.1977 to 18.09.1988 = 14, *i.e.,* 0 odd day.

Now, it is clear that 2 marriage anniversaries would fall on Sunday in the next 15 yr.

14

Direction and Distance

Direction is a measurement of position of one thing with respect to another thing or a reference point. Distance between two points is a measurement of the shortest distance, *i.e.,* the displacement between the two points.

The shortest distance between two points may be different from the total distance covered in going from one point to the other.

Different types of questions covered in this chapter are as follows

- Finding the Direction Only
- Finding the Distance Only
- Finding both the Distance and Direction

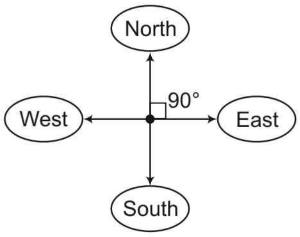
The problems based on direction and distance have instructions regarding the movement of a person or an object from a starting point (also called origin) upto an end point (also called destination).

These instructions generally provide magnitude as well as direction of the movement. These questions are designed to test the candidate's ability to sense direction.

Questions on direction and distance are simpler than other questions, if the student possesses the right knowledge of the directions.

Prime Directions

There are four prime directions as shown below



1. North
2. South
3. East
4. West

The angle between any two prime directions is 90°.

Subdirections/Cardinal Directions

A direction between two main or prime directions is known as a subdirection/cardinal direction.

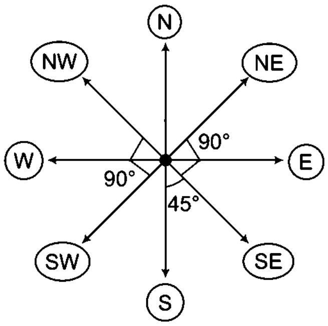
There are four subdirections as given below

1. North-East (NE)
2. South-East (SE)
3. South-West (SW)
4. North-West (NW)

The angle between any two adjacent subdirections is 90°.

Representation of Directions

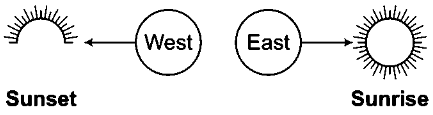
The various directions discussed above are represented on paper as shown below


N
NW
NE
W
E
90°
90°
45°
SW
SE
S

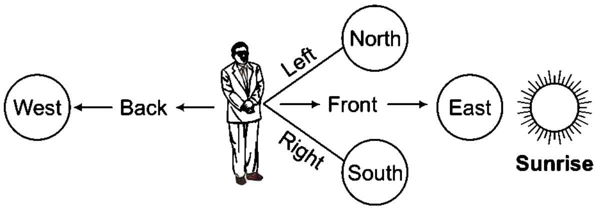
Angle formed between a prime direction and a subdirection is 45°.

Concept of Directions

It is based on the position of the Sun. The Sun rises in the East and sets in the West.

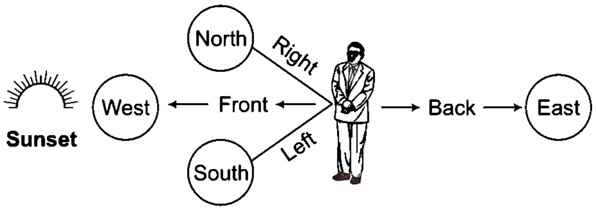

West
East
Sunset
Sunrise

If we face the Sun when it rises, then our position as follows


West
Back
Left
North
Front
East
Right
South
Sunrise

- Direction towards our front = **East**
- Direction towards our left hand = **North**
- Direction towards our back = **West**
- Direction towards our right hand = **South**

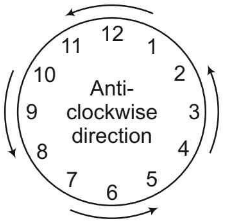
If we face sunset, then our position is as follows

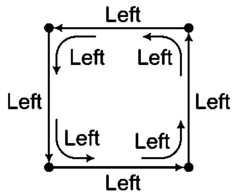

North
Right
West
Front
Back
East
Sunset
South
Left

- Direction towards our back = **East**
- Direction towards our right hand = **North**
- Direction towards our front = **West**
- Direction towards our left hand = **South**

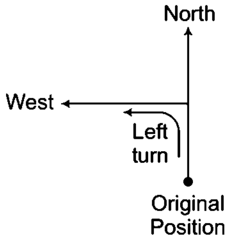
Concept of Turn

1. **Left Turn** (Anti-clockwise Turn)—When a person turns in a direction opposite to motion of a clock, then this turn is called left turn or anti-clockwise turn.

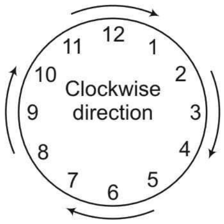

12
1
2
3
4
5
6
7
8
9
10
11
Anti-
clockwise
direction

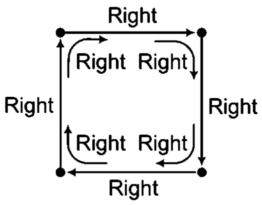

Left
Left
Left
Left
Left
Left
Left
Left

- When a person goes towards North from his original position and turns anti-clockwise, then it is his left.

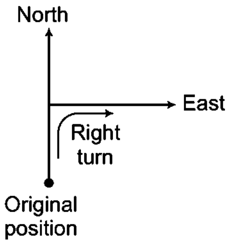

North
West
Left
turn
Original
Position

2. **Right Turn** (Clockwise Turn)—When a person takes a turn in the direction of motion of clock, then this turn is called right turn or clockwise turn.


12
1
2
3
4
5
6
7
8
9
10
11
Clockwise
direction


Right
Right
Right
Right
Right
Right
Right
Right

- When a person goes towards North and turns clockwise, then it is his right.


North
East
Right
turn
Original
position

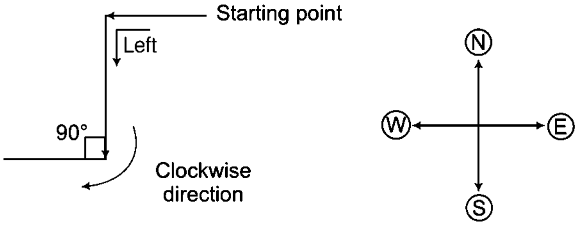
Now, following conclusions can be drawn for taking a turn in a particular direction

Direction before taking the turn	Direction in which the person or vehicle will be moving after taking the turn	
	Right	**Left**
(i) North	East	West
(ii) South	West	East
(iii) East	South	North
(iv) West	North	South
(v) North-West	North-East	South-West
(vi) South-West	North-West	South-East
(vii) South-East	South-West	North-East
(viii) North-East	South-East	North-West

Ex **1** A girl is going towards West, then she turned left, then turned 90° in clockwise direction. In which direction is she going now?

(a) East (b) West (c) North (d) None of these

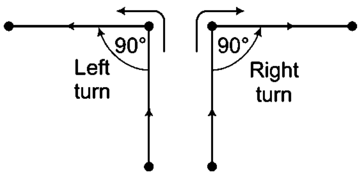
Sol. (*b*) According to the question, the direction diagram will be as follows


Starting point
Left
90°
Clockwise direction
N
W
E
S

Clearly, the direction diagram shows that the girl is going in West direction.

K Memory *Add-ons*

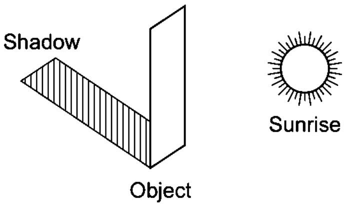
- If the angle at which a turn takes place is not given, then the angle is assumed to be right angle, *i.e.*, 90°. If it is said that a person turns left (anti-clockwise), then the turn will be leftward at 90° and if it is said that a person turns right (clockwise), then the turn will be rightward at 90°.


90°
Left turn
90°
Right turn

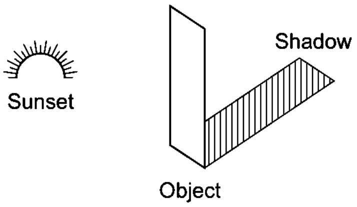
Concept of Shadow

In the morning, when the Sun rises in the East, the shadow of any person or object is in the West direction. Similarly, in the evening, when the sun sets in the West, the shadow of a person or an object is towards the East.

Shadow at the time of sunrise


Shadow
Sunrise
Object

Shadow at the time of sunset


Sunset
Shadow
Object

➘ At 12:00 noon, there will be no shadow as the rays of the Sun are vertically downwards at that time.

Based on the diversity of the type of questions that are asked in various competitive exams, we have classified the questions into the following types

Type 1 Finding the Direction Only

There are broadly six types of questions asked in various competitive examinations based on finding the direction only

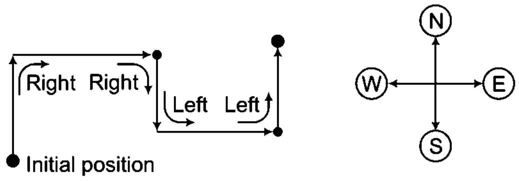
A. When Initial Direction is Given

In this type of questions, initial direction of a person's movement along with the various turns taken during the course of a journey is given. The objective is to determine the final direction in which the person is moving.

Ex **2** Vandana is going Northwards. She turns right, moves some distance and again turns to her right. After moving some distance she turns to her left, goes forward and again turns to her left. In which direction now is Vandana going?

(a) North (b) South-West (c) South (d) West

Sol. (*a*) According to the question, the direction diagram can be drawn as

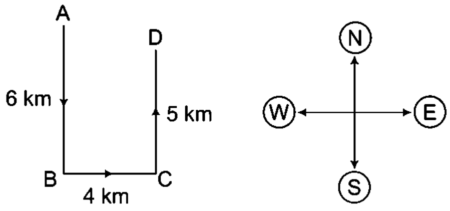


Clearly, Vandana is going towards North.

Ex **3** A man walks 6 km South, turns left and walks 4 km, again turns left and walks 5 km. Which direction is he facing now? **[SSC (Multitasking) 2014]**

(a) South (b) North (c) East (d) West

Sol. (*b*) Let the man starts from the point A and passing through B and C, he reaches D.

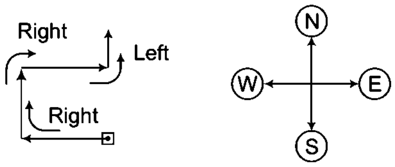


Clearly, he is now facing North.

Ex **4** A man started walking West. He turned right, then right again and finally turned left. Towards which direction was he walking now? **[SSC (CGL) 2011]**

(a) North (b) South (c) West (d) East

Sol. (*a*) According to the question, the direction diagram can be drawn as



Now, he is walking towards North.

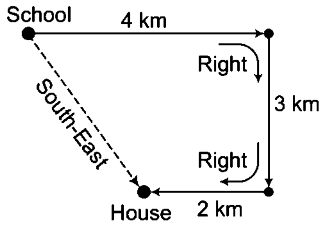
B. When Final Direction is Given

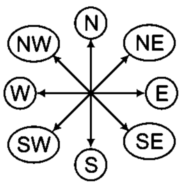
In this type of questions, various turns taken during a journey are given along with the final direction. The initial direction is required to be determined.

Ex **5** Shiv goes 4 km straight from his school. He turns to his right and walks 3 km. He again moves 2 km after turning right to reach his house. If his house is located in South-East from his school, then in which direction Shiv started moving initially from his school?

(a) North-East (b) West (c) East (d) North

Sol. (c) According to the information stated in the question, direction diagram can be drawn as follows





Clearly, he started moving towards East initially.

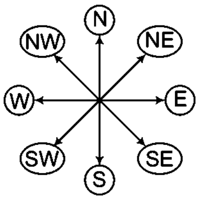
C. Directions After Replacement

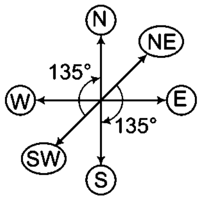
In this type of questions, one direction gets designated by some other direction, there by changing the designation of other directions accordingly. It is required to determine the new designation of any one (or more) of the remaining directions.

Ex **6** If South-West becomes North, then what will North-East be?

(a) North (b) South-East (c) South (d) East

Sol. (c) The diagrammatic representation of direction is as shown below





Clearly, directions are moving 135° clockwise. Hence, North-East will become South moving 135° clockwise.

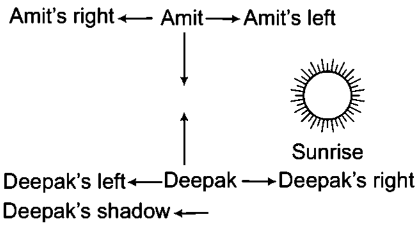
D. When Shadow is Given

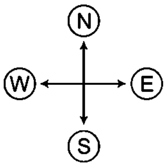
In this type of questions, the direction of shadow form action is given and based on this information the direction of a person is to be found out.

Ex **7** At sunrise, Amit and Deepak are having a conversation standing in front of each other. The shadow of Deepak is formed towards the right hand of Amit. What direction is Deepak facing?

(a) North-East (b) South (c) East (d) North

Sol. (*d*) According to the direction, the direction diagram is drawn as



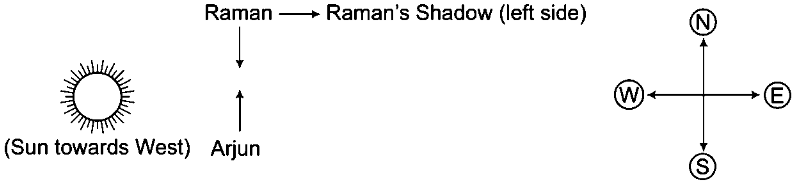


Clearly, Deepak is facing North.

***Ex* 8** One evening before sunset, two friends Raman and Arjun were talking to each other face to face. If Raman's shadow was exactly to his left side, which direction was Arjun facing? **[SSC (Steno) 2013]**

(a) West (b) East (c) North (d) South

Sol. (c) According to the question,



So, Arjun was facing North.

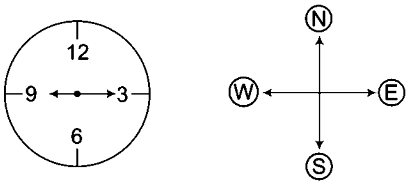
E. Clock Based Directions

Sometimes direction based problems involve application of knowledge of clocks and the relative positioning of both hands of clocks at particular time. In these type of questions, direction of minute or hour hand is to be found out as per the given time.

***Ex* 9** The time on the watch is 9 : 15 and the hour hand points towards West. The direction of the minute hand is

(a) North (b) South (c) East (d) West

Sol. (c) According to the question, the direction diagram will be as follows



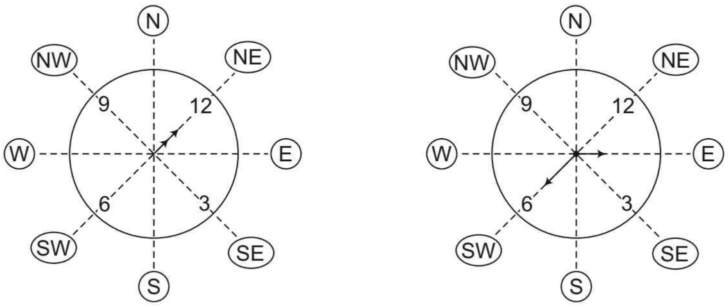
So, when hour hand is pointing towards West, then the minute hand will be pointing towards East at 9 :15.

***Ex* 10** A clock is so placed that at 12 noon its minute hand points towards North-East. In which direction does its hour hand point at 1: 30 pm? **[NIFT (UG) 2014]**

(a) North (b) South (c) East (d) West

Sol. (c) In this question, the clock is placed, so that at 12 noon its minute hand point towards North-East.

We know that, minute and hour hand point in the same direction at 12 noon. Therefore, the clock will look some what like this.



12 : 00 Noon 1 : 30 PM

At 1 : 30 pm, the hour hand will point in the East direction.

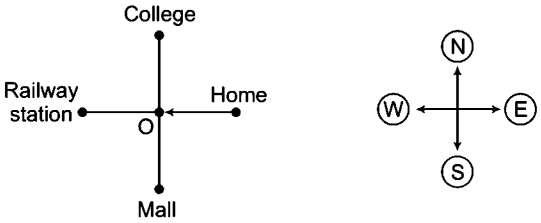
F. Finding Relative Directions

In these questions, relative positions of two or more objects/persons are given and based on this information, the candidate is required to find out the direction as asked in the question.

***Ex* 11** Samar wants to go college which is situated in a direction opposite to that of a mall. He starts from his house, which is in the East and comes at a four way place (chauraha). His left side road goes to the mall and straight in front is the railway station. In which direction is the college located?

(a) North (b) North-East (c) South (d) East

Sol. (*a*) According to the question, we have the below direction diagram

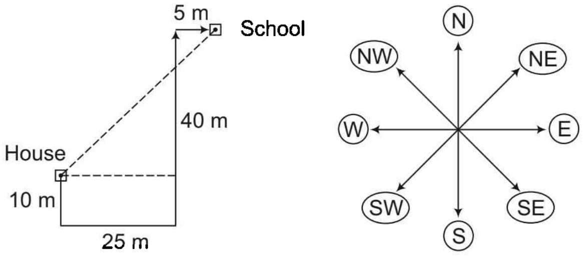


Samar comes from East towards West. He reaches O (four way place). Now, college will not be in front or left. It will be towards the right. So, it will be in the North direction.

Ex **12** Ram walks 10 m South from his house, turns left and walks 25 m, again turns left and walks 40 m, then turns right and walks 5 m to reach the school. In which direction is the school from his house? **[SSC (CGL) 2013]**

(a) North (b) South-West (c) North-East (d) East

Sol. (c) According to the question, we have the following direction diagram



So, it is clear from the diagram that school is in North-East direction from Ram's house.

Practice Corner **14.1**

Build your Confidence...

1. Rashmi goes towards East from a point P and then turns left. She walks some distance and then turns her right. Which direction is she facing now?

(a) North (b) East (c) West (d) South

2. A man goes 5 km East, then he turns right and goes 4 km, then he turns left and goes 5 km. Which direction is he facing now? **[SSC (CGL) 2012]**

(a) North (b) South (c) East (d) West

3. City C is to the South of city B and city A is to the North of city C. In which direction city A is located in respect of city B? **[Canara Bank (PO) 2010]**

(a) North
(b) South
(c) East
(d) Cannot be determined
(e) West

4. City D is to the West of city M. City R is to the South of city D. If city K is to the East of city R, then in which direction is city K located in respect of city D? **[Syndicate Bank (Clerk) 2011]**

(a) North
(b) East
(c) North-East
(d) South-East
(e) None of these

5. Kamal is facing South. He turns 135° in the anti-clockwise direction and then 180° in the clockwise direction. What direction is he facing now?

(a) North
(b) South-West
(c) East
(d) North-West

6. Surbhi is facing East. She turns 100° in the clockwise direction and then 145° in the anti-clockwise direction. Which direction is she facing now?

(a) West
(b) North-East
(c) North
(d) South-West

7. A person walks 1 mile to West, turns left and walks 1 mile and turns left and walks 1 mile and again turns left and walks 1 mile. What is the direction he is facing now?

(a) North (b) South (c) East (d) West

8. I was facing East from where I turned to my left and walked 12 ft, then I turned towards right and walked 6 ft. After that I walked 6 ft in South direction and at last I walked 6 ft in the West. Then, in which direction am I standing from the original point?

(a) West
(b) East
(c) South
(d) North

9. A person starts towards South direction. Which of the following orders of directions will lead him to East direction?

(a) Right, Right, Right (b) Left, Left, Left
(c) Left, Right, Right (d) Right, Left, Right

10. If the digit 12 of a clock is pointing towards East, then in which direction will digit 9 point?

(a) South (b) West
(c) North (d) North-East

11. A man starts from his house and walked straight for 10 m towards North and turned left and walked 25 m. He then turned right and walked 5 m and again turned right and walked 25 m. Which direction is he facing now? **[SSC (CGL) 2012]**

(a) North (b) East (c) South (d) West

12. If Ram's house is located to the South of Krishna's house and Govinda's house is to the East of Krishna's house, in what direction is Ram's house situated with respect to Govinda's house? **[SSC (CGL) 2012]**

(a) North-East (b) North-West (c) South-East (d) South-West

13. A boy first goes in South direction, then he turns towards left and travels for some distance. After that he turns right and moves certain distance. At last he turns left and travels again for some distance. Now, in which direction is he moving?

(a) South (b) West (c) East (d) North

14. Kunal travels 10 m from his shop and turns to his left. After that he turns to right from the crossing. After moving certain yards, he turns to left and again turns to left after moving some distance. Finally, he turns to right. If at final position he is facing North direction, then which direction he was facing while coming out of his shop?

(a) South (b) West (c) East (d) North

15. If East is replaced by South-East, then West will be replaced by which of the following directions?

(a) North-East (b) North
(c) East (d) North-West

16. Neeraj wants to go to school from his house. First of all he goes to the crossing, from here he turns to right and reaches the bus stand. Bus stand is opposite to the library. In which direction is school locate?

(a) North (b) East
(c) Cannot be determined (d) West

17. Town D is towards East of town F. Town B is towards North of town D. Town H is towards South of town B. Towards which direction is town H from town F? **[SBI (PO) 2010]**

(a) East (b) South-East
(c) North-East (d) Data inadequate
(e) None of these

18. Parmila is going towards East. She turns left, moves on some distance and again turns to her left. After walking some distance she turns to her right and moves on. In which direction she is gong now? **[MAT 2011]**

(a) North (b) South
(c) North-West (d) West

19. Raman starts from his house and goes towards 15 m North, then he turns his right and walks 30 m before taking right turn and moving again upto 30 m to reach a temple. In which direction is the temple with respect to Raman's house? **[MAT 2010]**

(a) North-West (b) South
(c) South-East (d) West

20. Radhika went 50 m South from her house, then turned left and went 20 m, then turning to North she went 30 m. In which direction is her home from this point? **[SSC (FCI) 2012]**

(a) North (b) South-West
(c) East (d) North-West

21. A man starts for his office in the North direction. he turns to his left, and then to his right and again to his right. In which direction will he be facing? **[SSC (CPO) 2012]**

(a) South (b) West
(c) East (d) North

22. Mohan started from a point 'A' and proceeded 7 km straight towards East, then he turned left and proceeded straight for a distance of 10 km. He, then turned left again and proceeded straight for a distance of 6 km and then turned left again and proceeded straight for another 10 km. In which direction is Mohan from his starting point?

(a) East (b) West (c) North (d) South

23. A policeman left his police post and proceeded South 4 km on hearing a loud sound from point A. On reaching the place, he heard another sound and proceeded 4 km to his left to the point B. From B he proceeded left to reach another place C, 4 km away. In which direction, he has to go to reach his police post?

(a) North (b) South
(c) East (d) West

24. B is to the South-West of A, C is to the East of B and South-East of A and D is to the North of C in line with B and A. In which direction of A is D located?

(a) North (b) East
(c) South-East (d) North-East

25. Rahim started from point X and walked straight 5 km in West, then turned left and walked straight 2 km and again turned left and walked straight 7 km. In which direction is he from the point X?

(a) North-East (b) South-West
(c) South-East (d) North-West

26. A direction pole was situated on the road crossing. Due to an accident, the pole turned in such a manner that the pointer which was showing East, started showing South. Sita, a traveller went to the wrong direction thinking it to be West. In what direction actually she was travelling? **[SSC (CGL) 2013]**

(a) North (b) West
(c) East (d) South

27. If South-East becomes North and North-East becomes West and all the rest directions are changed in the same manner, what will be the direction for the West? **[UP PSC 2012]**

(a) North-East (b) South
(c) South-East (d) South-West

28. A girl is facing North. She turns 180° in the anti-clockwise direction and then 225° in the clockwise direction. Which direction is she facing now? **[CG PSC 2013]**

(a) West (b) North-East
(c) South-West (d) East
(e) North-West

29. There are four roads. I have come from the South and want to go to the temple. The road to the right leads me away from the coffee house while straight road leads only to a college. In which direction is the temple? **[UP PSC 2013]**

(a) North (b) East (c) South (d) West

30. The time in a clock is quarter past twelve. If the hour hand points to the East, which is the direction opposite to the minute hand? **[UP PSC 2013]**

(a) South-West (b) South
(c) West (d) North

31. Asha walks 3 km Southward and then turns right and walks 2 km. She again turns right and walks 3 km and turns towards her left and starts walking straight. In which direction is she walking now? **[NIFT (UG) 2013]**

(a) East (b) North
(c) South (d) West

32. One morning at 7 O'clock, Naresh started walking with his back towards the Sun. Then, he turned towards left, walked straight and then turned towards right and walked straight. Then, he again turned towards left. Now, in which direction is he facing? **[SSC (10+2) 2013]**

(a) North (b) East
(c) West (d) South

33. Tendulkar hits a ball towards North in a one day international cricket match between India and Pakistan. A Pakistani fielder, Shahid Afridi comes straight from East to field the ball. Which direction does Shahid Afridi come from to field the ball? **[NIFT (PG) 2013]**

(a) South (b) North
(c) West (d) East

34. If North-West becomes West and South-East becomes East. North-East becomes North and all other directions are changed in a similar manner, then what will be the direction of South? **[NIFT (PG) 2013]**

(a) South-West (b) South-East
(c) North-East (d) None of these

35. From his house Deepak went 25 km to North. Then, he turned West and covered 15 km. Then, turned South and covered 10 km. Finally, turning to East, he covered 15 km. In which direction is he from his house? **[SSC (CPO) 2013]**

(a) North (b) South (c) West (d) East

36. C is to the West of B and South-West of A.D is to the North-West of A and North to C and is in line with AB. In which direction from the point of A, B is located? **[SSC (10+2) 2012]**

(a) North-East (b) South-East
(c) North-West (d) South-West

37. A train runs 120 km in West direction, 30 km in South direction and then 80 km in East direction before reaching the station. In which direction is the station from the train's starting point? **[MAT 2014]**

(a) South-West (b) North-West
(c) South-East (d) South

38. While facing East you turn to your left and walk 10 yards. Then, turn to your left and walk 10 yards and now turn 45° to your right and go straight to cover 50 yards. Now, in what direction are you with respect to the starting point? **[SNAP 2013]**

(a) North-East (b) North
(c) South-East (d) North-West

39. A man is facing West. He turns 45° in the clockwise direction and then another 180° in the same direction and then 270° in the anti-clockwise direction. Which direction is he facing now? **[MAT 2013]**

(a) South (b) North-West
(c) West (d) South-West

40. One morning, Rita started to walk toward the sun. After walking a while, she turned to her left and again to her left. After walking a while, she again turned right. Which direction is she facing now? **[SSC (Multitasking) 2014]**

(a) East (b) West (c) North (d) South

41. Raj is standing in the middle of a square field. He starts walking diagonally to North-East. Then, he turns right and reaches the far end of the field. Then, he turns right and starts walking. In the midway, he again turns right and starts walking. In halfway, he turns to his left and reaches a new far end. In what direction is Raj now? **[SSC (CGL) 2013]**

(a) North (b) South
(c) North-West (d) South-West

42. Roshan, Vaibhav, Vinay and Sumit are playing cards. Roshan and Vaibhav are partners. Sumit faces towards North. If Roshan faces towards West, then who faces towards South? **[CLAT 2014]**

(a) Vinay (b) Vaibhav
(c) Sumit (d) Data is inadequate

43. Kate walks 4 km towards South. She, then turns towards her left and walks 8 km more. After that she turns left again and walks another 8 km. Here, she meets her friend coming from the opposite direction and they both stop here. Which direction would she be facing? **[SSC (CGL) 2013]**

(a) North (b) South (c) East (d) West

44. A boy was misdirected from his way while returning to his home from his school. In order to reach his home, he first moved 3 km in south direction and then turned to his left and moved 2 km in straight direction on the road leading to the East. From there he moved to his left and walked 3 km. After this, he again turned to his left and moved 1 km. Finally he reached his home. The home of the boy was in which direction from his school? **[SSC (CGL) 2013]**

(a) South (b) West
(c) North (d) East

45. Rani and Sarita started from a place X. Rani went West and Sarita went North, both travelling with the same speed. After sometime, both turned their left and walked a few steps, if they again turned to their left, in which directions' the faces of Rani and Sarita will be with respect to X? **[SSC (CGL) 2013]**

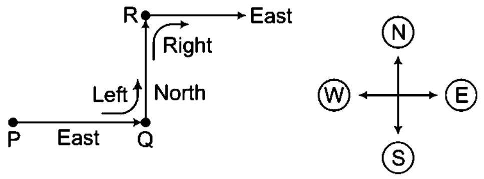
(a) North and East
(b) North and West
(c) West and North
(d) East and South

46. Sumi ran a distance of 40m towards the South. She then turned to the right and ran for about 15m, turned right again and ran 50m. Turning to right, then ran for 15m. Finally she turned to the left an angle of 45° and ran. In which direction was she running finally? **[SSC (10+2) 2013]**

(a) South-East
(b) South-West
(c) North-East
(d) North-West

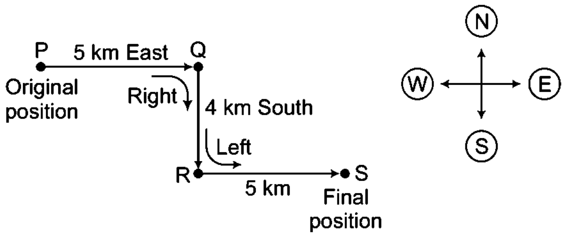
Response & Interpretations **(14.1)**

1. (*b*) According to the question, Rashmi's path is as follows


R
East
Right
Left
North
P
East
Q
N
W
E
S

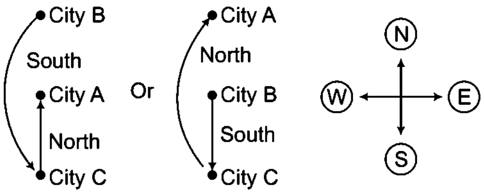
Clearly, Rashmi is facing East.

2. (*c*) According to the question, the direction diagram will be as follows


P
5 km East
Q
Original position
Right
4 km South
Left
R
5 km
S
Final position
N
W
E
S

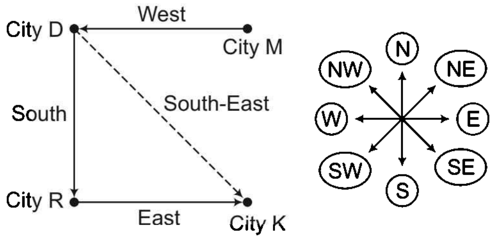
Clearly, man is facing East.

3. (*d*) According to the question, the diagram will be as follows


City B
South
City A
North
City C
Or
City A
North
City B
South
City C
N
W
E
S

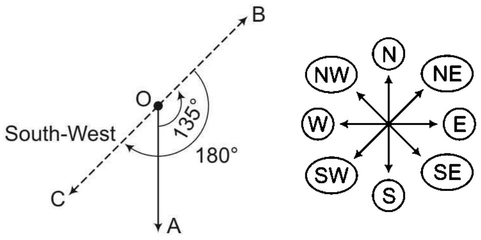
Therefore, the direction of city A in respect of B cannot be determined.

4. (*d*) According to the question, the direction diagram is as follows


City D
West
City M
South
South-East
City R
East
City K
N
NW
NE
W
E
SW
SE
S

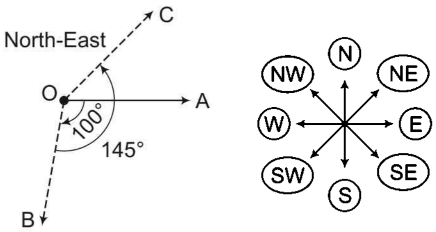
Hence, city K is located in the South- East direction.

5. (*b*) According to the question, the direction diagram is as follows


B
O
135°
South-West
180°
C
A
N
NW
NE
W
E
SW
SE
S

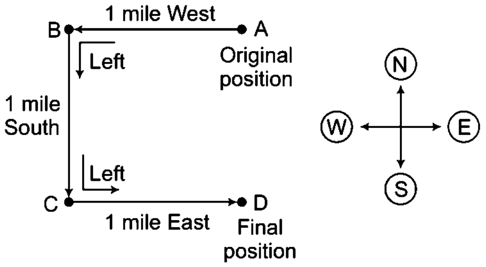
Clearly, Kamal is facing South-West.

6. (*b*) According to the question, the direction diagram will be as follows


C
North-East
O
A
100°
145°
B
N
NW
NE
W
E
SW
SE
S

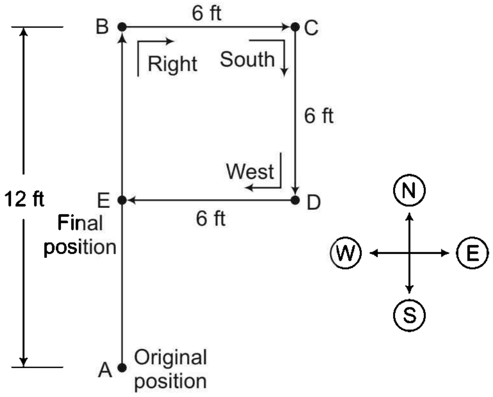
Clearly, Surbhi is facing North-East.

7. (*c*) According to the question, the direction diagram will be as follows


1 mile West
B
A
Left
Original position
1 mile South
Left
C
D
1 mile East
Final position
N
W
E
S

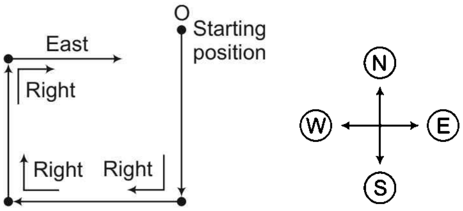
Clearly, person is facing East.

8. (*d*) According to the question, the direction diagram will be as follows


6 ft
B
C
Right
South
6 ft
West
12 ft
E
Final position
6 ft
D
A
Original position
N
W
E
S

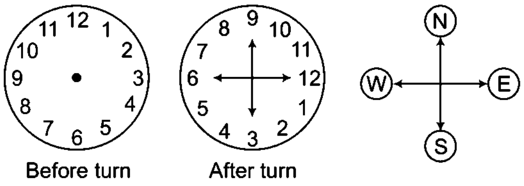
Clearly, E is to the North of A.

9. (*a*) According to the question, the direction diagram will be as follows


O
Starting position
East
Right
Right
Right
N
W
E
S

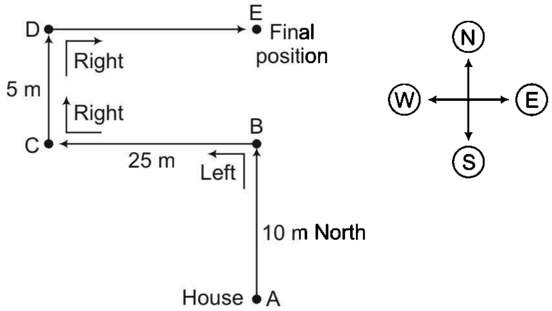
Clearly, right, right and right turns lead towards East.

10. (*c*) According to the question, the diagrams will be as follows


12
1
2
3
4
5
6
7
8
9
10
11
Before turn
9
10
11
12
1
2
3
4
5
6
7
8
After turn
N
W
E
S

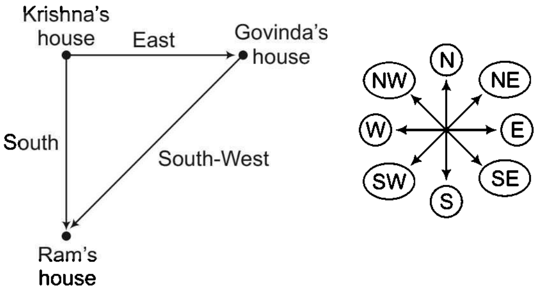
Clearly, digit 9 will point towards North.

11. (*b*) According to the question, the diagram will be as follows


D
E
Final position
Right
5 m
Right
B
C
25 m
Left
10 m North
House
A
N
W
E
S

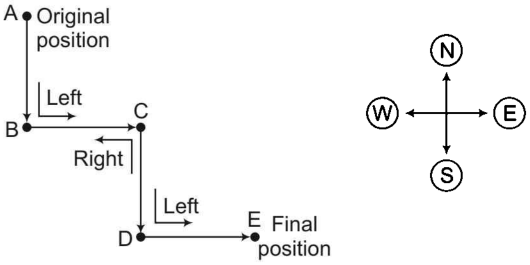
Clearly, he is facing East.

12. (*d*) According to the question, the direction diagram will be as follows


Krishna's house
East
Govinda's house
South
South-West
Ram's house
N
NW
NE
W
E
SW
SE
S

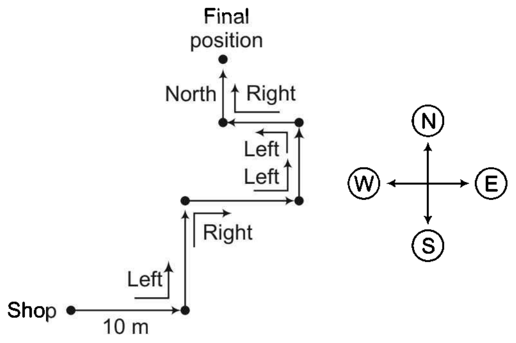
Clearly, Ram's house is to the South-West of Govinda's house.

13. (*c*) According to the question, the direction diagram will be as follows


A
Original position
Left
C
B
Right
Left
E
Final position
D
N
W
E
S

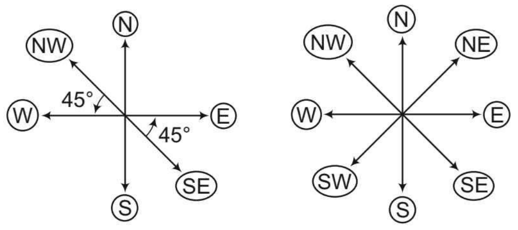
Clearly, boy is moving towards East.

14. (*c*) According to the question, the direction diagram will be as follows


Final
position
North
Right
Left
Left
Right
Left
Shop
10 m
N
W
E
S

Clearly, Kunal is facing East while coming out of his shop.

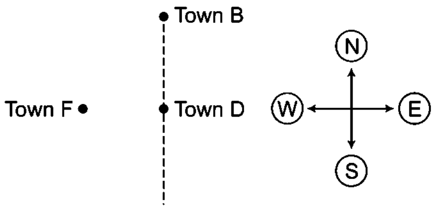
15. (*d*) According to the question, the diagram will be as follows


N
NW
45°
W
E
45°
SE
S
N
NW
NE
W
E
SW
SE
S

Clearly, West will be replaced by North-West.

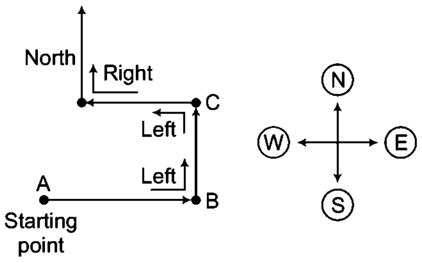
16. (*c*) Neither initial nor final direction is given. Hence, the direction cannot be determined.

17. (*d*) According to the question, the direction diagram is as follows


Town B
Town F
Town D
N
W
E
S

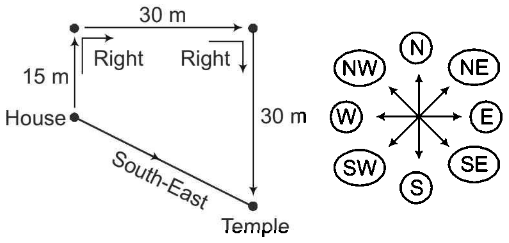
Now, H may lie anywhere on the dotted line. Hence, direction of H with respect to F cannot be determined definitely as data given is inadequate.

18. (*a*) According to the question, the direction diagram is as follows


North
Right
C
Left
A
Left
B
Starting
point
N
W
E
S

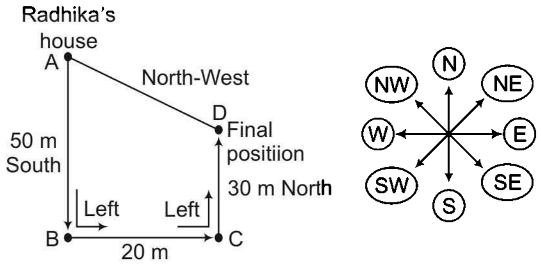
Clearly, Parmila is moving towards North.

19. (*c*) According to the question, the direction diagram is as follows


30 m
Right
Right
15 m
House
30 m
South-East
Temple
N
NW
NE
W
E
SW
SE
S

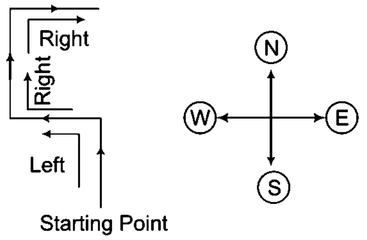
Clearly, temple is towards South-East with respect to Raman's house.

20. (*d*) According to the question, the direction diagram will be as follows


Radhika's
house
A
North-West
D
Final
positiion
50 m
South
30 m North
Left
Left
B
20 m
C
N
NW
NE
W
E
SW
SE
S

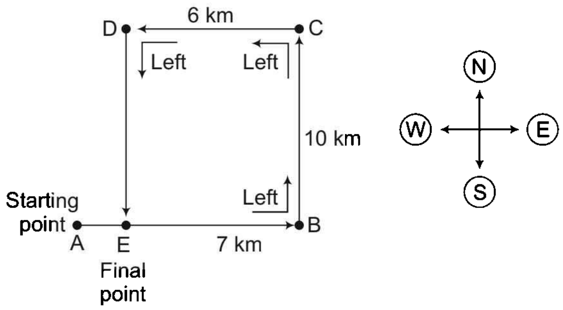
Clearly, Radhika's house is towards North-West from the final position D.

21. (*c*) According to the question, the direction diagram will be as follows


Right
Right
Left
Starting Point
N
W
E
S

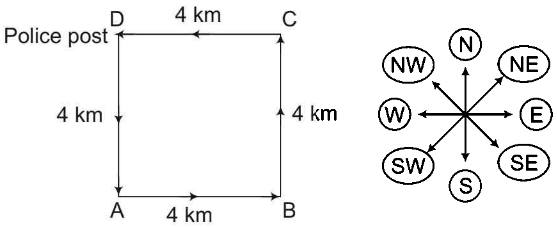
Clearly, the man will be facing East.

22. (*a*) According to the question, the direction diagram is as follows


D
6 km
C
Left
Left
10 km
Starting
point
Left
A
E
Final
point
7 km
B
N
W
E
S

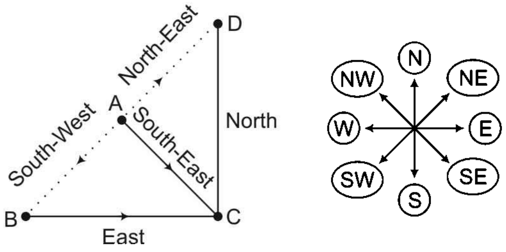
Clearly, Mohan is towards East from the starting point.

23. (*d*) According to the question, the direction diagram will be as follows


D
4 km
C
Police post
4 km
4 km
A
4 km
B
N
NW
NE
W
E
SW
SE
S

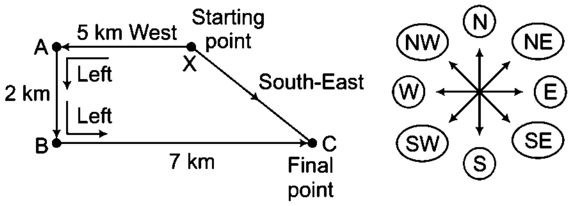
Clearly, from C the policeman will have to go towards West to reach police post at D.

24. (*d*) According to the question, the direction diagram will be as follows


North-East
D
South-West
A
South-East
North
B
C
East
N
NW
NE
W
E
SW
SE
S

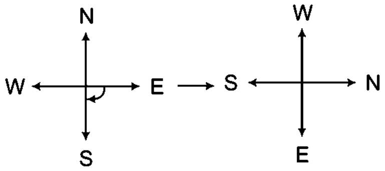
Clearly, D is to the North-East of A.

25. (*c*) According to the question, the direction diagram will be as follows


Starting point
5 km West
A
X
Left
2 km
South-East
Left
B
C
7 km
Final point
N
NW
NE
W
E
SW
SE
S

Clearly, Rahim at point C is to the South-East of X.

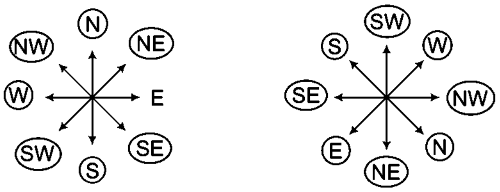
26. (*a*)



The, pointer which was showing West started showing South. Hence, the pointer turned 90° clockwise.

Now, Sita went to the direction thinking it as West. The original direction will be +90° clockwise *i.e.*, North direction.

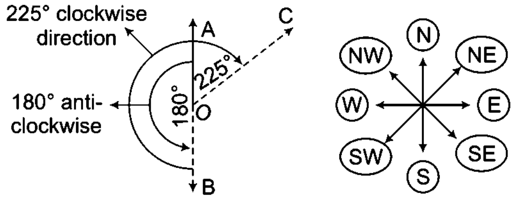
27. (*c*) According to the question, the direction diagram will be as follows


N
NW
NE
W
E
SW
SE
S
SW
S
W
SE
NW
E
N
NE

Original directions After changing directions

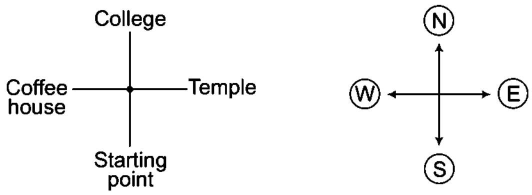
Now, from the above diagrams, its is clear that South-East will be the direction for West.

28. (*b*) According to the question, the direction diagram will be as follows


225° clockwise direction
A
C
225°
180° anti-clockwise
180°
O
B
N
NW
NE
W
E
SW
SE
S

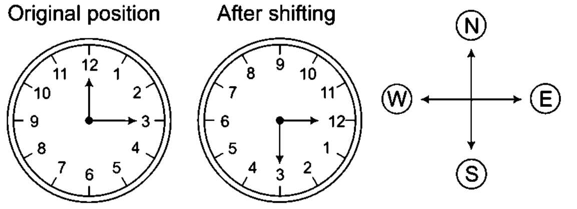
Clearly, the girl is facing North-East.

29. (*b*) If I come from the South, then my left hand denotes West and right hand denotes East and straight is North.


College
Coffee house
Temple
Starting point
N
W
E
S

Hence, only the remaining direction on the road *i.e.,* the East leads towards the temple.

30. (*d*) Time quarter past twelve means that the time is 12 : 15.

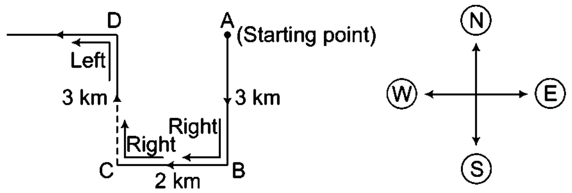

12
1
2
3
4
5
6
7
8
9
10
11
N
W
E
S

Original position After shifting

Hence, when hour hand is pointing towards East, then the minute hand is pointing towards South.

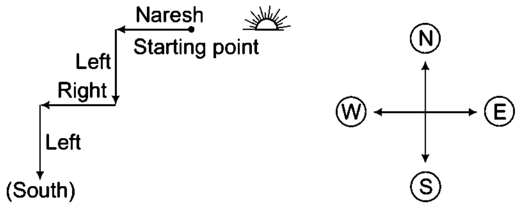
So, the direction opposite to minute hand is North.

31. (*d*) According to the question, the direction diagram will be as follows


D
A
(Starting point)
Left
3 km
3 km
Right
Right
C
2 km
B
N
W
E
S

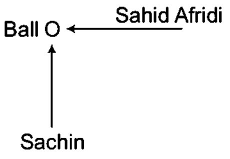
So, it is clear that she is now walking towards West.

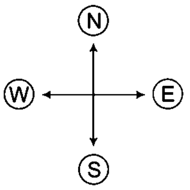
32. (*d*) According to the question, the direction diagram will be as follows


Naresh
Starting point
Left
Right
Left
(South)
N
W
E
S

So, Naresh is facing towards South.

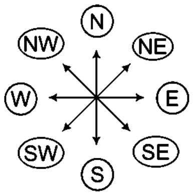
33. (*d*) According to the question, the direction diagram will be as follows


Ball O
Sahid Afridi
Sachin

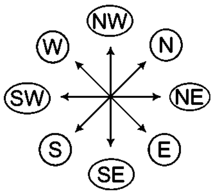


So, from the above diagram, it is clear that Shahid Afridi came from East.

34. (*b*) According to the question, the direction diagram will be as follows


N
NW
NE
W
E
SW
SE
S

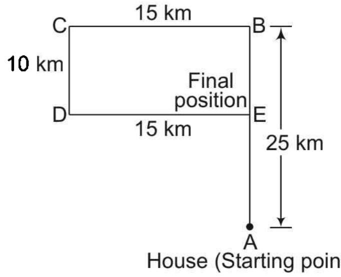
Original directions

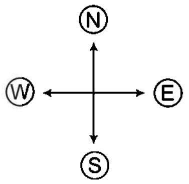

NW
W
N
SW
NE
S
E
SE

New directions

Now, from the above diagrams, it is clear that the direction for South is South-East.

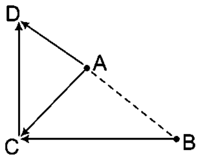
35. (*a*) According to the question, the direction diagram will be as follows

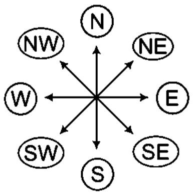

15 km
C
B
10 km
Final position
D
E
15 km
25 km
A
House (Starting point)



Clearly, Deepak is in North direction from his house

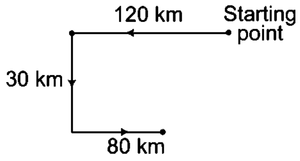
36. (*b*) According to the question, the direction diagram will be as follows

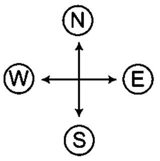



N
NW
NE
W
E
SW
SE
S

Clearly, the point B is located in the South-East direction from point A.

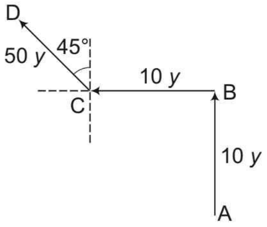
37. (*a*) According to the question, the direction diagram will be as follows


120 km
Starting point
30 km
80 km



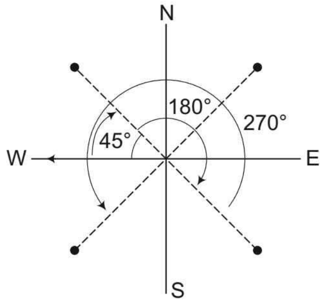
Clearly, station is in South-West direction from the train's starting point.

38. (*d*) Let *A* be the initial position of the man. He initially faced East and then turned his left in the direction of North and walked 10 yards.


D
50 y
45°
10 y
B
C
10 y
A

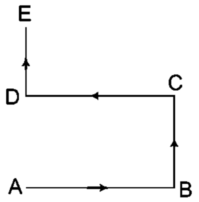
Then, turned his left in the direction of West and walked 10 yards. Now, he turned 45° to his right and walked 50 yards straight in the same direction. Now, the direction of the man with respect to his starting point is North-West.

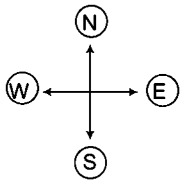
39. (*d*) According to the question, the direction diagram can be drawn as


N
180°
270°
45°
W
E
S

Finally, man is facing the South-West direction.

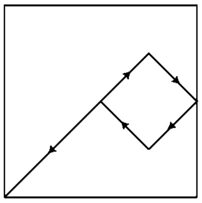
40. (*c*) Let Rita started from the point A.

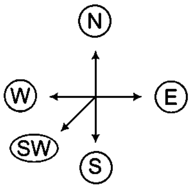




Passing through the points B, C and D, she is now going towards E. Clearly, she is now facing North.

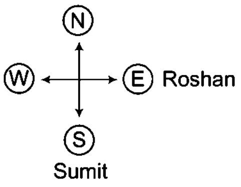
41. (*d*) Path of Raj is as follows





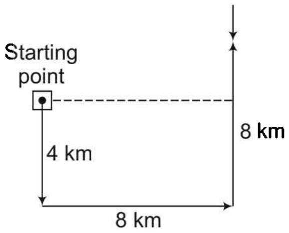
It is clear from the above figure that now Raj is in South-West direction.

42. (*d*) According to the question, we have the following direction diagram


N
W
E
Roshan
S
Sumit

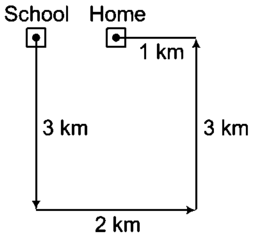
Here, it is not clear that the partners Roshan and Vaibhav sit opposite to each other or next to each other.

43. (*a*) According to the question, we have the following direction diagram


Starting point
4 km
8 km
8 km

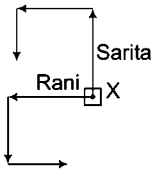
So, Kate is facing towards North.

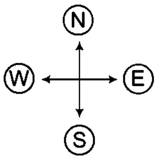
44. (*d*) According to the question, the direction diagram is as follows


School
Home
1 km
3 km
3 km
2 km

The home of boy was in East direction from his school.

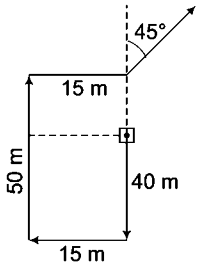
45. (*d*) According to the question, the direction diagram is as follows

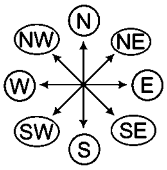

Sarita
Rani
X



So, Rani is facing towards East and Sarita is facing towards South.

46. (*c*) According to the question,the direction diagram is as follows


45°
15 m
50 m
40 m
15 m


N
NW
NE
W
E
SW
SE
S

So, she is running in the North-East direction.

Type 2 Finding the Distance Only

There are two types of questions based on finding the distance that are asked in various competitive examinations

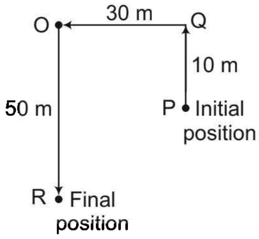
A. Finding the Total Distance

In this type of questions, it is asked to determine the total distance cover by a particular person or object.

***Ex* 13** Vipul goes Northward 10 m. He turns left and walks 30 m, then the again turns left and walks 50 m, then how much distance Vipul travelled?

(a) 60 m (b) 20 m (c) 10 m (d) 90 m

Sol. (*d*) According to the question, the direction diagram is drawn as


O
30 m
Q
10 m
50 m
P
Initial position
R
Final position

Total distance = PQ + QO + OR = 10 + 30 + 50 = 90 m

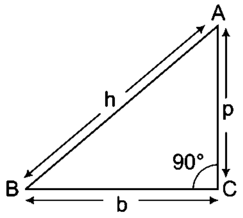
B. Finding the Minimum Distance

In this type of questions, minimum distance between initial and final points is to be found out

To find the minimum distance between the starting and end point, we use the **Pythagoras Theorem** which is stated as given below

"In a right angled triangle, square of the hypotenuse (h) is equal to the sum of the squares of its base (b) and perpendicular (p).

$$\boxed{h^2 = p^2 + b^2}$$



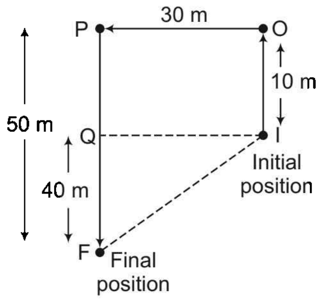
where, h = AB = Hypotenuse, b = BC = Base, p = AC = Perpendicular

AB (or BA) is the minimum or shortest distance to reach A from B (or to reach B from A).

Ex **14** Kavi walks Northward upto 10 m. He turns left and walks 30 m. Finally, he turns left and walks 50 m. At what distance Kavi is now from his starting position?

(a) 50 m (b) 10 m (c) 20 m (d) 90 m

Sol. (*a*) According to the question, the direction diagram is drawn as shown in adjacent figure



$$IO = 10\text{ m},\ OP = 30\text{ m},\ PF = 50\text{ m}$$
$$QI = OP = 30\text{ m},\ PQ = IO = 10\text{ m}$$
$$QF = PF - PQ = 50 - 10 = 40\text{ m}$$

F represents the final position.

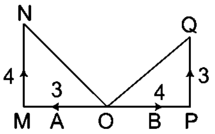
$\therefore$ Required distance, $IF = \sqrt{(QI)^2 + (QF)^2}$

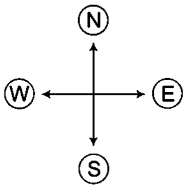
$$= \sqrt{(30)^2 + (40)^2} = \sqrt{900 + 1600} = \sqrt{2500} = 50\text{ m}$$

Ex **15** A and B start walking in opposite directions. A covers 3 km and B covers 4 km. Then, A turns right and walks 4 km while B turns left and walks 3 km. How far is each from the starting point? **[SSC (Steno) 2013]**

(a) 10 km (b) 8 km (c) 5 km (d) 4 km

Sol. (*c*) Let A and B started from point O. A towards West and B towards East and atlast they reached N and Q, respectively.





Distance of A from O, $ON = \sqrt{(OM)^2 + (MN)^2} = \sqrt{3^2 + 4^2} = 5\text{ km}$

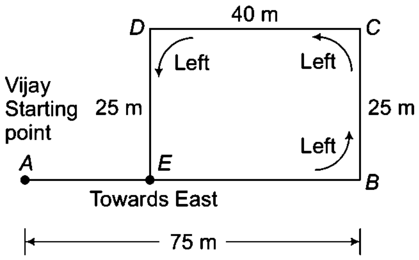
Distance of B from O, $OQ = \sqrt{(OP)^2 + (PQ)^2} = \sqrt{4^2 + 3^2} = 5\text{ km}$

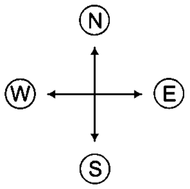
So, A and B are both at a distance of 5 km from the starting point.

Ex **16** Vijay starts walking straight towards East. After walking 75 m he turns to the left and walks 25 m straight. Again he turns to the left and walks a distance of 40 m straight. Again he turns to the left and walks a distance of 25 m. How far is he from the starting point? **[SSC (10+2) 2013]**

(a) 140 m (b) 115 m (c) 50 m (d) 35 m

Sol. (*d*) According to the question, the direction diagram is as shown below





$\therefore$ Distance between starting and ending point, $AE = AB - EB = 75 - 40 = 35\text{ m}$ $(\because EB = DC)$

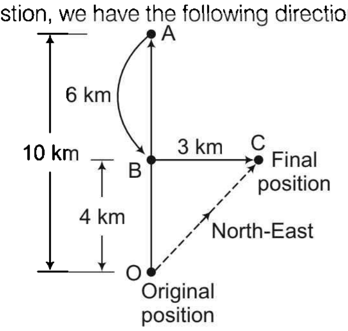
Type 3 Finding both the Distance and Direction

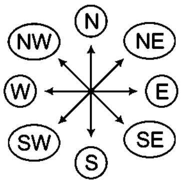
In this type of questions, it is asked to determine both distance and direction

***Ex* 17** Mahima goes 10 km North, then goes 6 km South, again she moves on 3 km East. At what distance is she now from original position and in which direction?

(a) 5 km North-East (b) 5 km South-East (c) 8 km North-East (d) 10 km South-East

Sol. (*a*) According to the question, we have the following direction diagram





Here, AB = 6 km, BC = 3 km, AO = 10 km and OB = AO – AB = (10 – 6) = 4 km

$\therefore$ $OC = \sqrt{(OB)^2 + (BC)^2} = \sqrt{4^2 + 3^2} = \sqrt{16 + 9} = \sqrt{25} = 5\text{ km}$

Hence, Mahima is at a distance of 5 km in the North-East direction in respect of original position.

***Ex* 18** Town D is 12 km towards the North of town A. Town C is 15 km towards the West of town D. Town B is 15 km towards the West of town A. How far and in which direction is town B from town C? **[BOI (Clerk) 2010]**

(a) 15 km towards North (b) 12 km towards North (c) 3 km towards South (d) 12 km towards South
(e) Cannot be determined

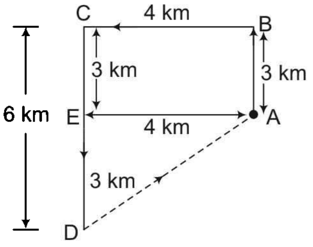
Sol. (*d*) According to the question, we have the following direction diagram

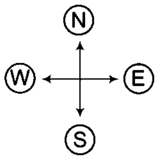
Hence, town B is 12 km South of town C.

***Ex* 19** Raghu is at point A. He walks 3 km to the North and then turns to his left. He walks 4 km in this direction. He turns left again and walks 6 km. If he wishes to reach point A again, in which direction should he be walking and what distance will he have to cover? **[SNAP 2013]**

(a) South-East, 5 km (b) South-East, 4 km (c) North-East, 5 km (d) North-East, 4 km

Sol. (*c*) According to the question, the direction diagram is as follows





By Pythagoras theorem, $(AD)^2 = (AE)^2 + (DE)^2 = (4)^2 + (3)^2 = 16 + 9$

$\Rightarrow$ $(AD)^2 = 25 \Rightarrow AD = 5\text{ km}$

Clearly, Raghu should walk 5 km in North-East direction to reach the point A again.

Practice Corner **14.1**

Build your Confidence...

1. Shreya started from point P and walked 2 m towards West. She, then took a right turn and walked 3 m before taking a left turn and walking 5 m. She finally took a left turn, walked 3 m and stopped at a point Q. How far is point Q from point P? **[SBI (Clerk) 2011]**

(a) 2 m (b) 6 m
(c) 7 m (d) 8 m
(e) 12 m

2. Mohan walked 30 m towards South, took a left turn and walked 15 m. He, then took a right turn and walked 20 m. He again took a right turn and walked 15 m. How far is he from the starting point? **[PNB (PO) 2010]**

(a) 95 m (b) 50 m
(c) 70 m (d) Cannot be determined
(e) None of these

3. Ankit started walking towards North. After walking 30 m, he turned towards left and walked 40 m. He, then turned left and walked 30 m. He again turned left and walked 50 m. How far is he from his original position?

(a) 50 m (b) 40 m
(c) 30 m (d) None of these

4. Laxman went 15 km to the West from house, then turned left and walked 20 km. He, then turned East and walked 25 km and finally turning left covered 20 km. How far is he now from his house?

(a) 15 km (b) 20 km
(c) 25 km (d) 10 km

5. A and B start walking from the same point A goes North and covers 3 km, then turns right and covers 4 km. B goes West and covers 5 km, then turns right and covers 3 km. How far apart are they from each other? **[SSC (CPO) 2012]**

(a) 10 km (b) 9 km
(c) 8 km (d) 5 km

6. Molly travelled from point A to point B which is 5 ft. He, then travelled 6 ft to his right and then turned to left and went 4 ft. Finally, he again went 6 ft to his left. How far is he from the point B now? **[SSC (CGL) 2012]**

(a) 10 ft (b) 6 ft
(c) 5 ft (d) 4 ft

7. In an open ground, Rakesh walks 20 m towards North, turns left and goes 40 m. He turns to his left again to walk 50 m. How far is he from starting point? **[MP PCS 2008]**

(a) 110 m (b) 70 m
(c) 50 m (d) 40 m
(e) None of these

8. Amit starts from a point A and walks 5 m towards North-East direction and reaches point B. From here, he travels 8 m in East direction and reaches point C. From C, he travels towards South-West direction and reaches point D after travelling a distance equal to AB. At last, he turns towards West direction and reaches point A. How much distance has been covered by Amit and which geometrical figure has been formed by the path travelled by him?

(a) 26 m, square (b) 26 m, parallelogram
(c) 26 m, trapezium (d) 16 m, parallelogram

9. Vinod starts from his house and travels 4 km in East direction, after that he turns towards left and moves 4 km. Finally, he turns towards left and moves 4 km. At what distance and in which direction he finally stands from his starting point?

(a) North, 4 km (b) North-East, 4 km
(c) South, 12 km (d) West, 4 km

10. A person moves 15 km in East direction, then turns towards North and moves 4 km. From here he turns towards West and travels 12 km. How far and in which direction is he from his starting point?

(a) 31 km, South-West (b) 5 km, North-East
(c) 19 km, North-East (d) 27 km, South-West

11. W walked 40 m toward West, took a left turn and walked 30 m. He, then took a right turn and walked 20 m. He again took a right turn and walked 30 m. How far was he from the starting point? **[Allahabad Bank (PO) 2010]**

(a) 70 m (b) 60 m
(c) 90 m (d) Cannot be determined
(e) None of these

12. Sheela walks 2 km from A to B. She turns right at 90° and goes 3 km upto C. She, then again turns right at 90° and goes 8 km upto D. Again she takes right turn at 90° and goes 3 km upto K. From K she takes right turn at 90 again and reaches at F after covering 4 km. Find the distance between A and F. **[MAT 2011]**

(a) 2 km (b) 4 km
(c) 6 km (d) 8 km

13. Sanjay's school is $10\sqrt{2}$ km in North-West direction from his house. The office of his father is 10 km in South direction from the school. The multiplex hall is 10 km towards East from the school. How far and in which direction is the multiplex hall from the office of his father?

(a) $10\sqrt{2}$ km, North-East (b) 20 km, North-East
(c) Cannot be determined (d) 10 km, South-East

14. Pankaj travels 10 m in North direction, he turns right and travels 20 m. Again he turns towards right and travels 25 m. Then, he turns towards left and travels 15 m. In which direction and how far is Pankaj from his original position?

(a) 35 m, East (b) 10 m, West
(c) 25 m, East (d) None of these

15. Amol travels a distance of 10 ft from A to B. Then, he turns to left and travels 5 ft and again turns to left and travels 2 ft. Finally, he turns to left and moves 5 ft. How far is he now from his orignal position?

(a) 5 ft (b) 8 ft
(c) 6 ft (d) 12 ft

16. Shyam walks 6 m towards East, then turns right and walks 9 m. Again, he turns to his left and walks 6 m. At what distance is he now from his original point? **[SBI (Clerk) 2011]**

(a) 15 m (b) 21 m
(c) 18 m (d) Cannot be determined
(e) None of these

17. Rohit drives a car from Bengaluru to Mysore. After 80 km he turns right and goes 50 km. After that he again turns to his right and moves on 70 km. Finally, he turns to his right and stops after moving a distance of 50 km. At what distance is Rohit now from Bengaluru? **[MAT 2011]**

(a) 10 km (b) 40 km
(c) 20 km (d) 30 km

18. A man goes 5 km East from his office. He then takes left turn and walks 3 km. He again takes left turn and walks 5 km. How far is he from starting point? **[RRB (TC/CC) 2010]**

(a) 3 km (b) 4 km
(c) 6 km (d) 7 km

19. A man travels 2 m towards North, then he turns towards East and travels 3 m. Finally, he travels 6 m in South direction. How far is he from his starting point?

(a) 11 m (b) 9 m (c) 5 m (d) 3 m

20. A and B start from in point in opposite directions. A travels 3 km and B also travels 3 km. Then, A turns towards right and travels 4 km and B turns towards right and travels 4 km. What is the distance between A and B?

(a) 8 km (b) 10 km (c) 12 km (d) 14 km

21. A boy goes 3 km South and then takes a turn towards West moves on 5 km. He, then again turns towards North and goes 6 km before turning towards East and moving upto 5 km. How far is the boy now from the starting point? **[SSC (CGL) 2011]**

(a) 3 km (b) 8 km (c) 14 km (d) 19 km

Directions (Q. Nos. 22-23) Read the following information carefully and answer the questions that follow. **[IBPS (PO) 2012]**

Point H is 6 m towards the East of point G, point R is 8 m North of point G. Point Q is exactly midway between point R and point G. Point K is 10 m to the South of point Q. Point L is 3 m towards the East of point Q. point S is exactly midway between point G and point H.

22. If a persons walks 4 m towards the South from point L, takes a right turn and walks for another 3 m, then which of the following points would he reach?

(a) Q (b) G (c) K (d) H
(e) None of these

23. If a person walks 8 m towards North from Point S, then which of the following points would he cross and how far will he be from point R?

(a) G, 4 m (b) H, 3 m (c) L, 6 m (d) L, 3 m
(e) G, 8 m

24. Ravi travelled 4 km straight toward South. He turned left and travelled 6 km straight, then turned right and travelled 4 km straight. How far is he from the starting point?

(a) 8 km (b) 10 km (c) 12 km (d) 18 km
(e) None of these

25. Starting from a point, Raju walked 12 m North, he turned right and walked 10 m, he again turned right and walked 12 m, then the turned left and walked 5 m. How far is he now and in which direction from the starting point?

(a) 27 m towards East (b) 5 m towards East
(c) 10 m towards West (d) 15 m towards East

26. Ram and Shyam start walking towards North and cover 20 m. Ram turns to his left and Shyam to his right. After sometime, Ram walks to 10 m in the same direction in which he turned. On the other hand, Shyam walks only 7 m. Later, Ram turns towards his left and Shyam to his right. Both walk 25 m forward. How far is Ram from Shyam now? **[SSC (CGL) 2013]**

(a) 10 m (b) 20 m (c) 17 m (d) 5 m

27. A man travels 4 km due North, then travels 6 km due East and further travels 4 km due North. How far he is from the starting point? **[SSC (CGL) 2013]**

(a) 6 km (b) 14 km (c) 8 km (d) 10 km

28. Ram cycled 10 km Southward from his home, turned right and cycled 6 km, turned right cycled 10 km, turned left and cycled 15 km. How many kilometers will he have cycled to reach straight home? **[SSC (CGL) 2013]**

(a) 10 km (b) 21 km
(c) 16 km (d) 20 km

29. A man starts from his home and walks 10 km towards South. Then, he turns right and walks 6 km, again he turns right and goes 10 km. Finally, he turns right and walks 5 km. At what distance is he from his straight point? **[UP PSC 2012]**

(a) 3 km (b) 2 km
(c) 1 km (d) 5 km

30. Madhuri travels 14 km Westwards and then turns left and travels 6 km and further turns left and travels 26 km. How far is Madhuri now from the starting point? **[NIFT (UG) 2013]**

(a) $\sqrt{180}$ km (b) $\sqrt{80}$ km
(c) $\sqrt{100}$ km (d) None of these

31. A cyclist goes 30 km to North and then turning East he goes 40 km. Again he turns to his right and goes 20 km. After this, he turns to his right and goes 40 km. How far is he from his starting point ? **[SSC (10+2) 2013]**

(a) 6 km (b) 10 km
(c) 25 km (d) 40 km

32. A school bus driver starts from the school, drives 2 km towards North, takes a left turn and drives for 5 km. He, then takes a left turn and drives for 8 km before taking a left turn again and driving for further 5 km. The driver finally takes a left turn and drives 1 km before stopping. How far and towards which direction should the driver drive to reach the school again? **[IBPS (PO) 2011]**

(a) 3 km towards North (b) 7 km towards East
(c) 6 km towards South (d) 6 km towards West
(e) 5 km towards North

33. Rajnikanth left his home for office in car. He drove 15 km straight towards North and then turned Eastwards and covered 8 km. He, then turned to left and covered 1 km. He again turned left and drove for 20 km and reached office. How far and in what direction is his office from the home? **[IB (ACIO) 2013]**

(a) 21 km, West (b) 15 km, North-East
(c) 20 km, North-West (d) 26 km, North-West

34. Hari travelled 17 km to the East, he turned left and went 15 km, he again turned left and went 17 km. How far is he from the starting point? **[SSC (CPO) 2013]**

(a) 32 km (b) 17 km
(c) 2 km (d) 15 km

35. One day, Ravi left home and cycled 10 km Southwards, turned right and cycled 5 km and turned right and cycled 10 km and turned left and cycled 10 km. How many kilometres will he now have to cycle in n straight line to reach his home? **[MAT 2013]**

(a) 10 km (b) 15 km
(c) 20 km (d) 25 km

36. A child was looking for his father. He went 90 m towards East before turning to his right. He, then went 20 m before turning to his right again to look for his father at his uncle's place 30 m from this point. His father was not there. He, then went 100 m to the North before meeting his father in a street. How far from the starting point did the son meet his father? **[MAT 2013]**

(a) 80 m (b) 100 m (c) 140 m (d) 200 m

37. Raju moves 40 km North, then he turns right and moves 50 km. Again, he turns right and moves 30 km. Finally, he turns right and reaches 50 km. How far is he from the starting point? **[SSC (10+2) 2012]**

(a) 10 km (b) 40 km (c) 20 km (d) 30 km

38. In an exercise, Krishnan walked 25 m towards South and then he turned to his left and moved for 20 m. He again turned to his left and walked 25 m. Thereafter, he turned to his right and walked 15 m. What is the distance and direction of his present location with reference to the starting point? **[IB (ACIO) 2012]**

(a) 74 m, North-East (b) 60 m, North
(c) 35 m, East (d) 40 m, South-East

39. A man walks Southwards and covers 10 km distance. He, then turns to his right and walks 15 km, after which he turns to his right again and walks 10 km. What is the shortest distance from his start to end point? **[SSC (Steno) 2013]**

(a) 35 km (b) 10 $\sqrt{2}$ km (c) 10 km (d) 15 km

40. Sharada started to move in the direction of South. After moving 15 m, she turned to her left twice and moved 15 m each time. Now, how far is she and in which direction from her starting point? **[SSC (CGL) April 2014]**

(a) 20 m, West (b) 15 m, East (c) 15 m, South (d) 30 m, East

41. A boy starts from home in early morning and walks straight for 8 km facing the Sun. Then, he takes a right turn and walks for 3 km. Then, he turns right again and walks for 2 km and then turns left and walks for 1 km. Again he turned right and walked 1 km. Then, he turns right and travels for 4 km straight. How far is he from the starting point? **[SSC (CGL) 2013]**

(a) 5 km (b) 6 km (c) 2 km (d) 4 km

Directions (Q. Nos. 42-43) Study the given information carefully and answer the given questions. **[IBPS (Clerk) 2013]**

- Point A is 11 m North of point B.
- Point C is 11 m East of point B.
- Point D is 6 m North of point C.
- Point E is 7 m West of point D.
- Point F is 8 m North of point E.
- Point G is 4 m West of point F.

42. How far is point F from point A?
(a) 43 m (b) 4 m (c) 3 m (d) 7 m
(e) 5 m

43. How far and in which direction is point G from point A?
(a) 3 m North (b) 5 m North (c) 4 m North (d) 4 m South
(e) 3 m South

44. Ram goes 15 m North, then turns right and walks 20 m, then again turns right and walks 10 m, then again turns right and walks 20 m. How far is he from his original position? **[SSC (10+2) 2013]**
(a) 5 (b) 10 (c) 15 (d) 20

45. A house faces North. A man coming out of his house walked straight for 10 m, turned left and walked 25 m. He then turned right and walked 5 m and again turned right and walked 25 m. How far is he from his house? **[SSC (FCI) 2012]**
(a)15 m (b) 55 m (c) 60 m (d) 65 m

46. Shiela and Belah start from their office and walk in opposite directions each travelling 10 km. Shiela then turns left and walks 10 km. Belah turns right and walks 10 km. How far are they now from each other? **[SSC (CGL) 2013]**
(a) 10 km (a) 5 km (a) 8 km (d) 20 km

47. A and B both are walking away from point 'X'. A walked 3 m and B walked 4 m from it, then A walked 4 m North of X and B walked 5 m South of A. What is the distance between them now? **[SSC (CGL) 2013]**
(a) 9.5 m (b) 9 m (c) 16 m (d) 11.40 m

48. John's house is 100 m North of his uncle's office. His uncle's house is located 200 m West of his (uncle's) office. Kabir is the friend of John and he stays 100 m East of John's house. The office of Kabir is located 100 m South of his house. Then, how far is his uncle's house from Kabir's office? **[SSC (FCI) 2012]**
(a) 200 m (b) 300 m (c) 400 m (d) 500 m

49. One day, Nita left home and cycled 10 km Southwards, turned right and cycled 5 km and turned right and cycled 10 km and turned left and cycled 10 km. How many kilometres will she have to cycle to reach her home straight? **[SSC (CGL) 2013]**
(a) 10 km (b) 15 km (c) 20 km (d) 25 km

50. Rajat moves from his office to the canteen straight at a distance of 12 m. Then he turned left and walked for 2 m. Then he turns left again and walks straight for 12 m. How far is he from his office? **[SSC (CGL) 2013]**
(a) 10 m (b) 12 m (c) 8 m (d) 2 m

51. Nassebah runs for 10 km in the Eastern direction. She then turns left and starts walking for 6 km. Again, she turns left and starts running for 6 km. Then, she turns left and walks again for 6 km. How far is she from the starting point? **[SSC (CGL) 2013]**
(a) 4 km (a) 5 km (c) 6 km (d) 3 km

52. Rachel starts walking towards North. After walking 15 m, she turns towards South and walks 20 m. She then turns towards East and walks 10 m. Then, again she walks 5 m towards North. How far is she from her starting point and in which direction? **[SSC (CGL) 2013]**
(a) 10 m, West (b) 5 m, East (c) 5 m, North (d) 10 m, East

53. Rohan walks a distance of 3 km towards North, then turns to his left and walks for 2 km. He again turns left and walks for 3 km. At this point he turns to his left and walks for 3 km. How many kilometres is he from the starting point? **[SSC (CGL) 2013]**
(a) 1 km (b) 2 km (c) 3 km (d) 4 km

54. Seema walks 30 m North. Then, she turns right and walks 30 m then she turns right and walks 55 m. Then, she turns left and walks 20 m. Then, she again turn left and walks 25 m. How many metres away is she from her original position? **[SSC (CPO) 2013]**
(a) 45 m (b) 50 m (c) 66 m (d) 55 m

Directions (Q. Nos. 55-56) Study the following information carefully to answer the given questions. **[Corporation Bank (PO) 2011]**

Point P is 9 m towards the East of point Q. Point R is 5 m towards the South of point P. Point S is 3 m towards the West of point R. Point T is 5 m towards the North of point S. Point V is 7 m towards the South of point S.

55. If a person walks in a straight line for 8 m towards West from point R, which of the following points would he cross the first?
(a) V (b) Q (c) T (d) S
(e) Cannot be determined

56. Which of the following points are in a straight line?
(a) P, R, V (b) S, T, Q (c) P, T, V (d) V, T, R
(e) S, V, T

Directions (Q. Nos. 57-58) Study the following formation carefully to answer the given questions. **[OBC (PO) 2010]**

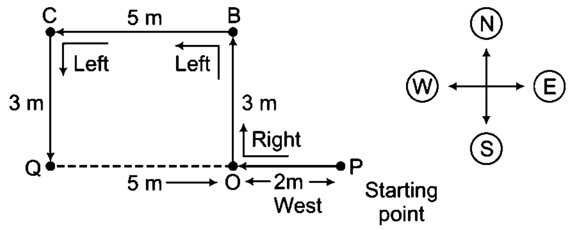
Point B is 12 m South of point A. Point C is 24 m East of point B. Point D is 8 m South of point C. Point D is 12 m East of point E and point F is 8 m North of point E.

57. If a man has to travel to point E from point A (through these points by the shortest distance), which of the following points will he pass through first?
(a) Point C (b) Point D (c) Point F (d) Point B
(e) None of these

58. If a man is standing facing North at point C, how far and in which direction is point F?
(a) 12 m, West (b) 24 m, East
(c) 12 m, East (d) 24 m, West
(e) None of these

Response & Interpretations **(14.2)**

1. (*c*) According to the question, the direction diagram will be as follows


C
5 m
B
Left
Left
3 m
3 m
Right
Q
P
5 m
O
2m
West
Starting point
N
W
E
S

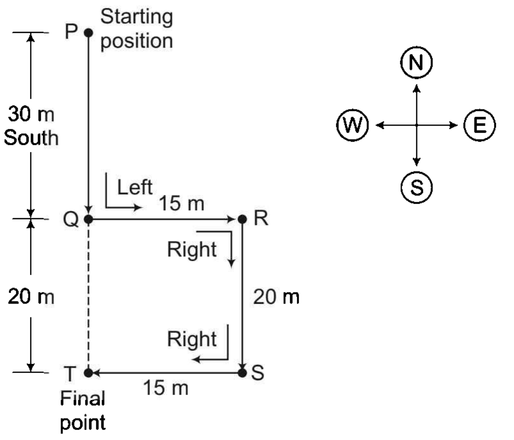
OP = 2 m

OB = QC = 3 m

BC = QO = 5 m

∴ Required distance, QP = QO + OP = 5 + 2 = 7 m

2. (*b*) According to the question, the direction diagram will be as follows


P
Starting position
30 m South
Left
15 m
Q
R
Right
20 m
20 m
Right
T
S
15 m
Final point
N
W
E
S

PQ = 30 m

QR = TS = 15 m

QT = RS = 20 m

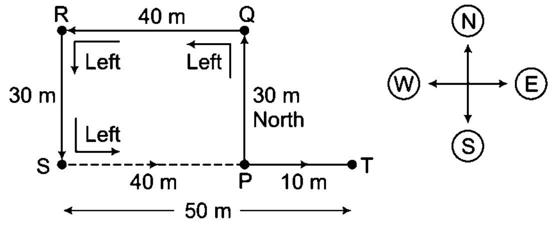
∴ Required distance, PT = PQ + QT = 30 + 20 = 50 m

3. (*d*) According to the question, the direction diagram will be as follows

P = Starting point

T = Finishing point

PQ = RS = 30 m

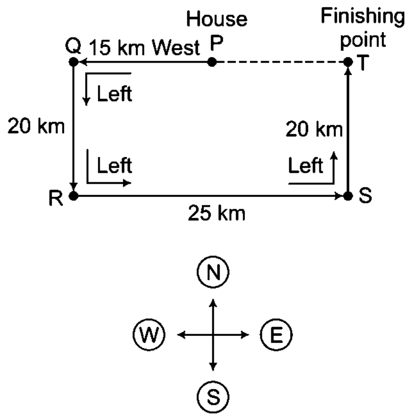

R
40 m
Q
Left
Left
30 m
30 m North
Left
S
40 m
P
10 m
T
50 m
N
W
E
S

QR = SP = 40 m

ST = 50 m

∴ Required distance, PT = ST – SP = 50 – 40 = 10 m

4. (*d*) According to the question, the direction diagram will be as follows


House
Finishing point
Q
15 km West
P
T
Left
20 km
20 km
Left
Left
R
S
25 km
N
W
E
S

PQ = 15 km

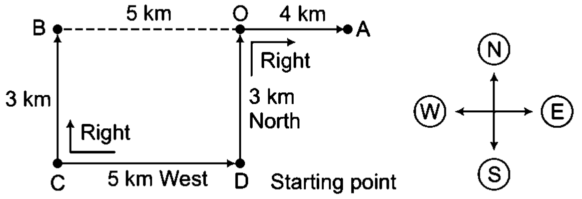
QR = TS = 20 km

RS = 25 km

∴ Required distance, PT = QT – QP = RS – QP

= 25 – 15 = 10 km

5. (*b*) According to the question, the direction diagram is as follows


B
5 km
O
4 km
A
Right
3 km
3 km North
Right
C
5 km West
D
Starting point
N
W
E
S

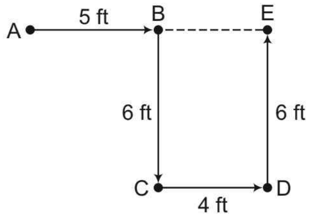
D = Starting point for A and B

CD = BO = 5 km

BC = OD = 3 km

∴ Required distance, AB = BO + OA = 5 + 4 = 9 km

6. (*d*) According to the question, the direction diagram will be as follows


A
5 ft
B
E
6 ft
6 ft
C
4 ft
D

A = Initial point

E = Finishing point

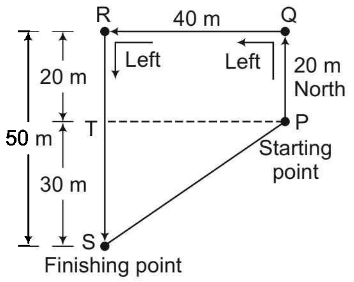
AB = 5 ft

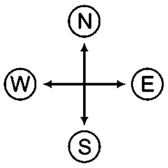
BC = DE = 6 ft

BE = CD = 4 ft

∴ Required distance, BE = 4 ft

7. (*c*) According to the question, the direction diagram is as follows


R
40 m
Q
Left
Left
20 m
North
20 m
50 m
T
P
Starting point
30 m
S
Finishing point



Here, $PQ = RT = 20\,m$, $QR = TP = 40\,m$

and $RS = 50\,m$

Now, $TS = RS - RT = 50 - 20 = 30\,m$

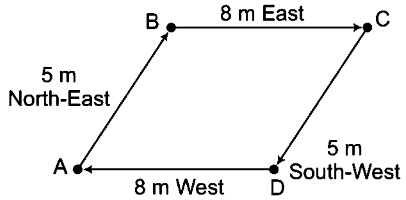
$\therefore$ Required distance, $PS = \sqrt{(TP)^2 + (TS)^2}$

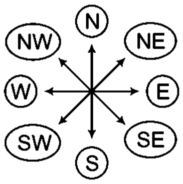
$= \sqrt{(40)^2 + (30)^2}$

$= \sqrt{1600 + 900}$

$= \sqrt{2500} = 50\,m$

8. (*b*) According to the question, the direction diagram is as follows


B
8 m East
C
5 m
North-East
5 m
South-West
A
8 m West
D


N
NW
NE
W
E
SW
SE
S

$BC = AD = 8\,m$

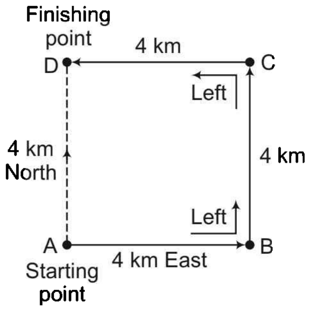
$AB = CD = 5\,m$

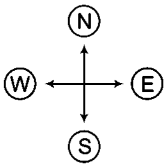
$\therefore$ Required distance $= AB + BC + CD + DA$

$= 5 + 8 + 5 + 8 = 26\,m$

and the geometrical figure formed is parallelogram.

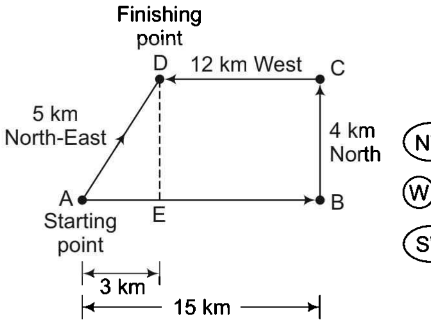
9. (*a*) According to the question, the direction diagram is as follows

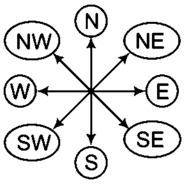

Finishing point
D
4 km
C
Left
4 km North
4 km
Left
A
B
Starting point
4 km East



Clearly, at finishing point, he is 4 km North from the starting point.

10. (*b*) According to the question, the direction diagram is as follows


Finishing point
D
12 km West
C
5 km
North-East
4 km
North
A
Starting point
E
B
3 km
15 km


N
NW
NE
W
E
SW
SE
S

$AB = 15\,m$

$BC = DE = 4\,km$

$CD = EB = 12\,km$

$AE = AB - CD$

$= 15 - 12 = 3\,km$

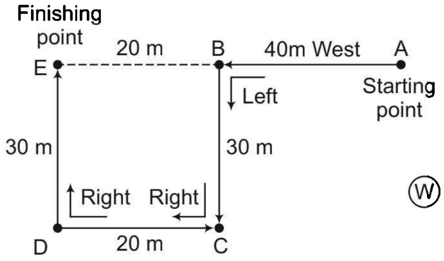
$\therefore$ Required distance, $AD = \sqrt{(DE)^2 + (AE)^2}$

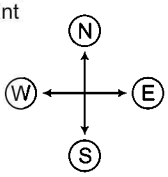
$= \sqrt{4^2 + 3^2}$

$= \sqrt{16 + 9} = 5\,km$

Hence, D is 5 km North-East from the starting point A.

11. (*b*) According to the question, the direction diagram will be as follows


Finishing point
E
20 m
B
40m West
A
Starting point
Left
30 m
30 m
Right
Right
D
20 m
C



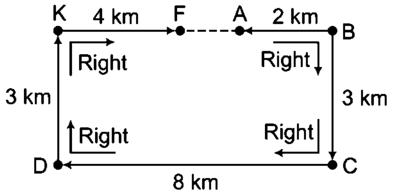
$AB = 40\,m$

$BC = DE = 30\,m$

$CD = BE = 20\,m$

$\therefore$ Required distance, $AE = AB + BE = 40 + 20 = 60\,m$

12. (*a*) According to the question, the direction diagram will be as follows


K
4 km
F
A
2 km
B
Right
Right
3 km
3 km
Right
Right
D
C
8 km

$BC = KD = 3\,km$

$CD = 8\,km$

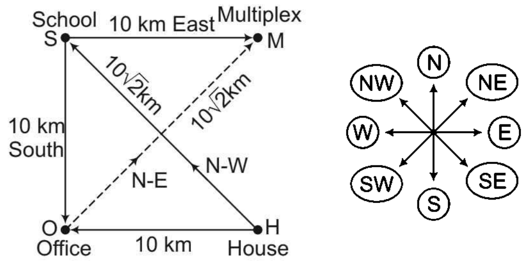
$AB = 2\,km$

$KF = 4\,km$

$\therefore$ Required distance, $AF = BK - (KF + AB)$

$= 8 - (4 + 2) = 8 - 6 = 2\,km$

13. (*a*) According to the question, the direction diagram will be as follows


School
S
10 km East
Multiplex
M
10√2km
10√2km
10 km
South
N-E
N-W
O
Office
10 km
H
House
N
NW
NE
W
E
SW
SE
S

As in a square, diagonals are equal.

$\therefore$ $SH = OM = 10\sqrt{2}$ km

$\therefore$ Required distance, OM

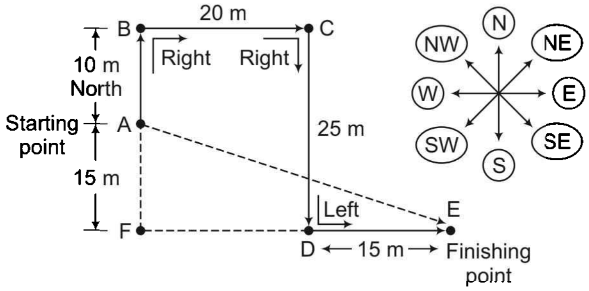
= Distance between office and multiplex

$= 10\sqrt{2}$ km

Also, it is clear from diagram that multiplex (M) is to the North-East of O (office)

So, the multiplex is $10\sqrt{2}$ km North-East from office.

14. (*d*) According to the question, the direction diagram will be as follows


B
20 m
C
10 m
North
Right
Right
Starting
point
A
25 m
15 m
Left
E
F
D
15 m
Finishing
point
N
NW
NE
W
E
SW
SE
S

A = Starting point, E = Finishing point

DE = 15 m, BC = FD = 20 m

FE = FD + DE = 20 + 15 = 35 m

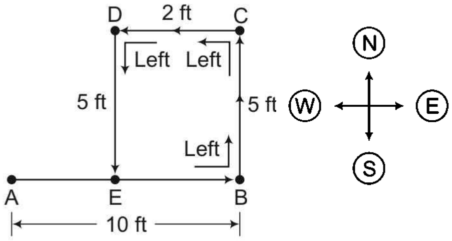
AF = BF – AB = 25 – 10 = 15 m

$\therefore$ Required distance, $AE = \sqrt{(AF)^2 + (FE)^2} = \sqrt{(15)^2 + (35)^2}$

$= \sqrt{225 + 1225} = \sqrt{1450}$

and direction is South-East.

15. (*b*) According to the question, the direction diagram is as follows


D
2 ft
C
Left
Left
5 ft
5 ft
Left
A
E
B
10 ft
N
W
E
S

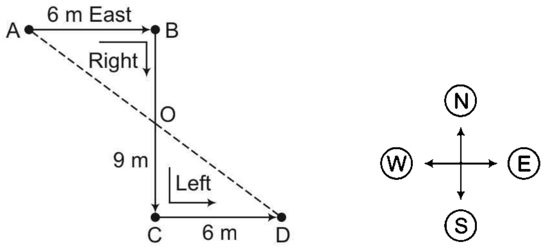
A = Original position, E = Final position

AB = 10 ft, BC = DE = 5 ft

CD = EB = 2 ft

$\therefore$ Required distance, AE = AB – EB = 10 – 2 = 8 ft

16. (*a*) According to the question, the direction diagram is as follows


6 m East
A
B
Right
O
9 m
Left
C
6 m
D
N
W
E
S

AB = 6 m

BC = 9 m

CD = 6 m

O is the mid-point of BC and AD.

$OB = OC = \frac{9}{2} = 4.5$ m

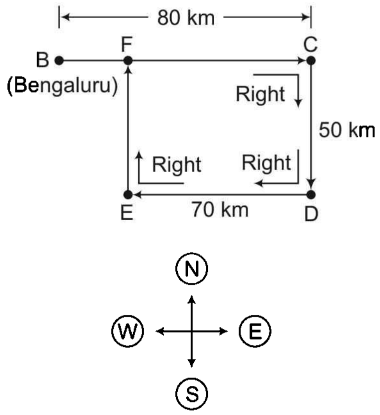
$OA = \sqrt{(AB)^2 + (OB)^2} = \sqrt{(6)^2 + (4.5)^2}$

$= \sqrt{36 + 20.25} = \sqrt{56.25} = 7.5$ m

OD = OA = 7.5 m

$\therefore$ Required distance, AD = AO + OD = 7.5 + 7.5 = 15 m

17. (*a*) According to the question, the direction diagram is as follows

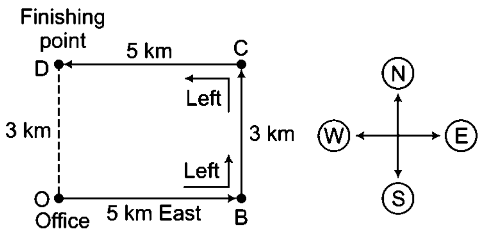

80 km
B
(Bengaluru)
F
C
Right
50 km
Right
Right
E
70 km
D
N
W
E
S

BC = 80 km, CD = FE = 50

DE = FC = 70 km

$\therefore$ Required distance, BF = BC – FC = 80 – 70 = 10 km

18. (*a*) According to the question, the direction diagram is as follows

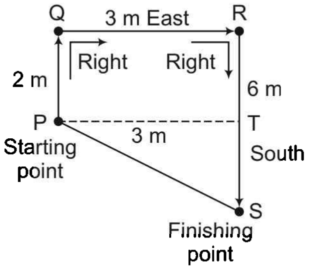

Finishing
point
D
5 km
C
Left
3 km
3 km
Left
O
Office
5 km East
B
N
W
E
S

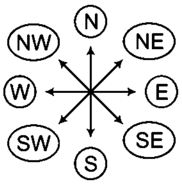
OB = CD = 5 km

BC = OD = 3 km

$\therefore$ Required distance, OD = 3 km

19. (*c*) According to the question, the direction diagram is as follows


Q
3 m East
R
Right
Right
2 m
6 m
P
T
3 m
Starting point
South
S
Finishing point


N
NW
NE
W
E
SW
SE
S

PQ = TR = 2 m, QR = PT = 3 m

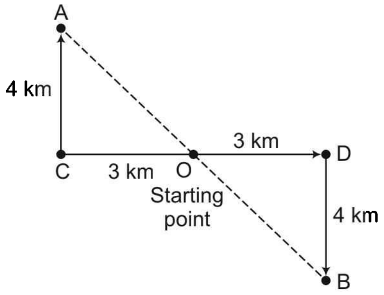
RS = 6 m, TS = RS − TR = 6 − 2 = 4 m

∴ Required distance, PS = $\sqrt{(PT)^2 + (TS)^2}$

$= \sqrt{(3)^2 + (4)^2} = \sqrt{9 + 16}$

$= \sqrt{25} = 5$ m

20. (*b*) According to the question, the direction diagram is as follows


A
4 km
3 km
D
C
3 km
O
Starting point
4 km
B

AO = OB, OC = OD = 3 km

AC = BD = 4 km, AO = $\sqrt{(4)^2 + (3)^2}$

$= \sqrt{16 + 9} = \sqrt{25} = 5$ km

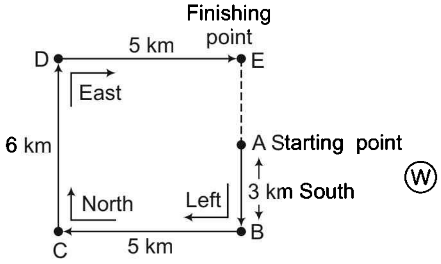
∵ AO = OB

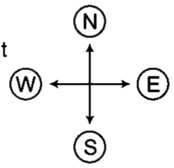
∴ Required distance, AB = AO + OB

= AO + AO

= 5 + 5 = 10 km

21. (*a*) According to the question, the direction diagram is as follows


Finishing point
5 km
D
E
East
6 km
A Starting point
3 km South
North
Left
B
C
5 km



A = Starting point

E = Finishing point

AB = 3 km

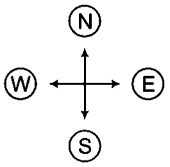
CD = EB = 6 km

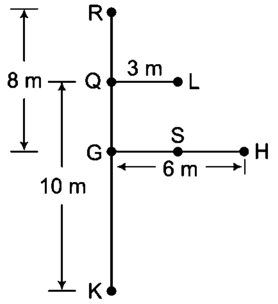
BC = DE = 5 km

∴ Required distance, AE = EB − AB = 6 − 3 = 3 km

Solutions (Q. Nos. 22-23)

According to the question, the direction diagram will be as follows



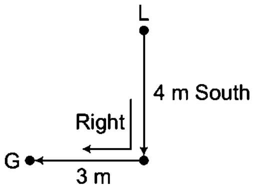

R
8 m
Q
3 m
L
S
G
H
6 m
10 m
K

RQ = QG = $\frac{8}{2}$ = 4 m as Q is the mid-point between R and G.

GS = SH = $\frac{6}{2}$ = 3 m as S is the mid-point between G and H.

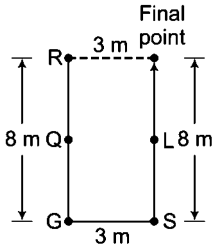
RG = 8 m, QK = 10 m, GH = 6 m, QL = 3 m.

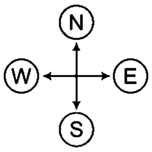
22. (*b*)


L
4 m South
Right
G
3 m

Clearly, the person starts from L goes 4 m southward and reaches point S from where he takes right turn and walks 3 m to reach G.

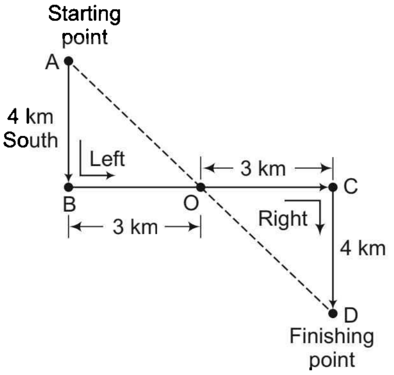
23. (*d*)

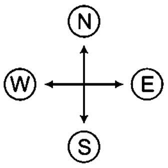

Final point
R
3 m
8 m
Q
L
8 m
G
S
3 m



Clearly, man will cross L and at the final point, he will be at a distance of 3 m from R.

24. (*b*) According to the question, the direction diagram will be as follows


Starting point
A
4 km South
Left
3 km
C
B
O
3 km
Right
4 km
D
Finishing point



O = Mid-point of BC and AD

AB = CD = 4 km, BC = 6 km

$$OB = OC = \frac{6}{2} = 3\,\text{km}$$

$$AO = OD$$

$$AO = \sqrt{(AB)^2 + (OB)^2} = \sqrt{(4)^2 + (3)^2}$$

$$= \sqrt{16 + 9} = \sqrt{25} = 5\,\text{km}$$

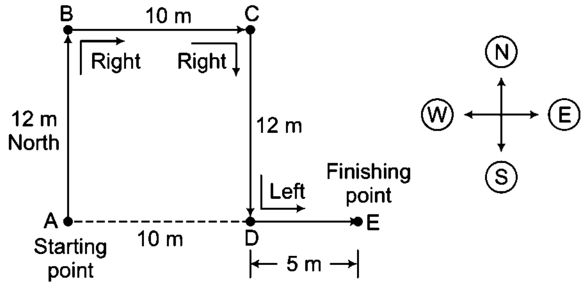
$\therefore$ Required distance, AD = AO + OD

= AO + AO = 2 × AO

= 2 × 5 = 10 km

(AO = OD as O is the mid-point of AD)

25. (*d*) According to the question, the direction diagram is as follows


B
10 m
C
Right
Right
12 m
North
12 m
Left
Finishing point
A
Starting point
10 m
D
E
5 m
N
W
E
S

AB = CD = 12 m

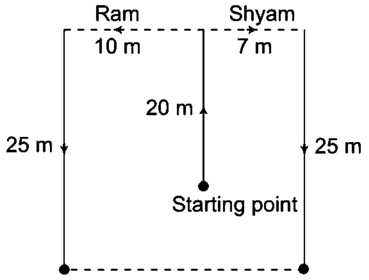
BC = AD = 10 m

DE = 5 m

$\therefore$ Required distance, AE = AD + DE = 10 + 5 = 15 m

Hence, at finishing point E, Raju is 15 m East from starting point A.

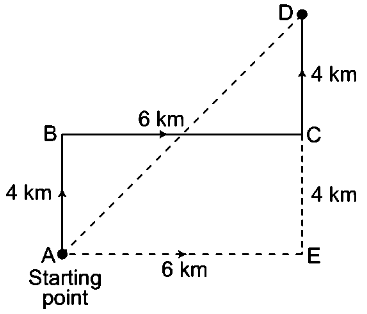
26. (*c*) According to the question, figure is drawn as


Ram
Shyam
10 m
7 m
20 m
25 m
25 m
Starting point

$\therefore$ The distance between Ram and Shyam at the end

= 10 + 7 = 17 m

27. (*d*)


D
4 km
6 km
B
C
4 km
4 km
A
Starting point
6 km
E

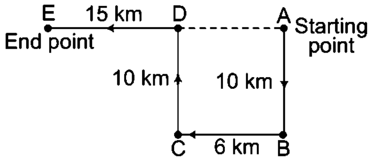
Distance between the starting point and end point is AD.

In ΔADE, $AD^2 = AE^2 + DE^2$ (by Pythagoras theorem)

$\Rightarrow$ $AD^2 = (6)^2 + (8)^2$

$\therefore$ $AD = \sqrt{36 + 64} = \sqrt{100} = 10\,\text{km}$

28. (*b*) According to the question, figure is drawn as

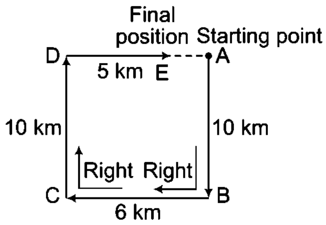

E
15 km
D
A
Starting point
End point
10 km
10 km
C
6 km
B

Now, to go back home Ram has to cycle

= ED + DA

= 15 + 6 = 21 km

29. (*c*) According to the question, the direction diagram will be as follows


Final position
Starting point
D
A
5 km
E
10 km
10 km
Right
Right
C
B
6 km

Now, CD = AB = 10 km

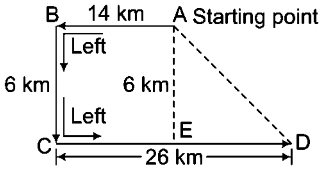
BC = AD = 6 km

ED = 5 km

$\therefore$ Required distance, AE = AD − ED

= 6 − 5 = 1 km

30. (*a*) According to the question, the direction diagram will be as follows


B
14 km
A
Starting point
Left
6 km
6 km
Left
C
E
D
26 km

Now, AB = CE = 14 km

BC = AE = 6 km

CD = 26 km

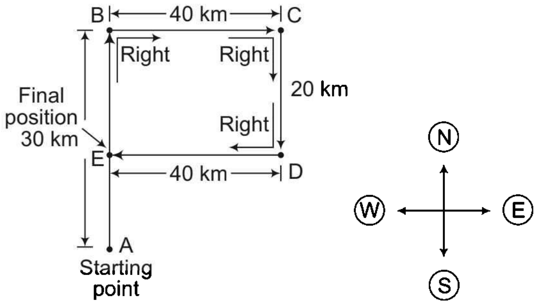
ED = CD − CE = 26 − 14 = 12 km

$\therefore$ Required distance, $AD = \sqrt{(AE)^2 + (ED)^2}$

(by Pythagoras theorem)

$= \sqrt{6^2 + 12^2} = \sqrt{180}\,\text{km}$

31. (*b*) According to the question, the direction diagram will be as follows


B
40 km
C
Right
Right
20 km
Final position
30 km
Right
E
40 km
D
A
Starting point
N
W
E
S

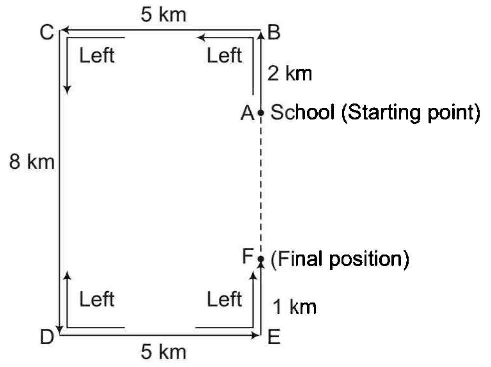
Now, AB = 30 km

BC = ED = 40 km

BE = CD = 20 km

$\therefore$ Required distance, AE = AB − BE = 30 − 20 = 10 km

32. (*e*) According to the question, the direction diagram will be as follows


5 km
C
B
Left
Left
2 km
A
School (Starting point)
8 km
F
(Final position)
Left
Left
1 km
D
E
5 km

Now, BC = DE = 5 km, CD = BE = 8 km

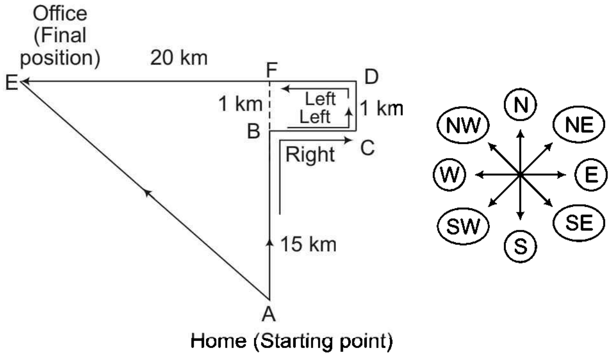
AB = 2 km, EF = 1 km

∴ Required distance, AF = BE − (AB + EF)

= 8 − (2 + 1) = 8 − 3 = 5 km

From the direction diagram, it is clear that the bus is present finally in the South direction of school. So, the driver needs to drive 5 km towards North direction to reach the school.

33. (*c*) According to the question, the direction diagram will be as follows


Office
(Final
position)
20 km
E
F
D
1 km
Left
Left
1 km
B
Right
C
15 km
A
Home (Starting point)
N
NW
NE
W
E
SW
SE
S

Now, AB = 15 km, CD = BF = 1 km

AF = AB + BF = 15 + 1 = 16 km

DE = 20 km

DF = BC = 8 km

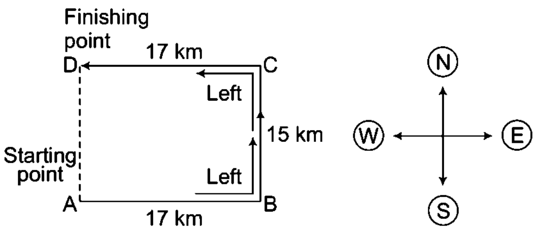
EF = DE − DF = 20 − 8 = 12 km

∴ Required distance, AE $= \sqrt{(AF)^2 + (EF)^2} = \sqrt{(16)^2 + (12)^2}$

$= \sqrt{256 + 144} = \sqrt{400} = 20$ km

So, his office is 20 km North-West.

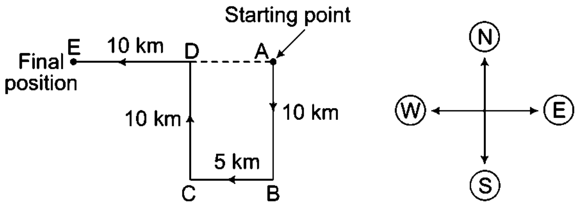
34. (*d*) According to the question, the direction diagram will be as follows


Finishing
point
17 km
D
C
Left
15 km
Starting
point
Left
A
B
17 km
N
W
E
S

Now, AB = CD = 17 km and BC = AD = 15 km

∴ Required distance, AD = 15 km

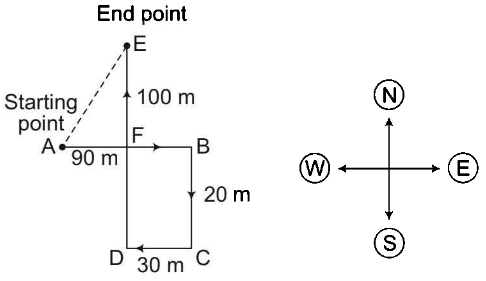
35. (*b*) According to the question, the direction diagram will be as follows


Starting point
Final
position
E
10 km
D
A
10 km
10 km
5 km
C
B
N
W
E
S

Now, AB = DC = 10 km, BC = DA = 5 km, ED = 10 km

∴ Required distance, EA = ED + DA = 10 + 5 = 15 km

36. (*b*) According to the question, the direction diagram will be as follows


End point
E
100 m
Starting
point
A
F
B
90 m
20 m
D
30 m
C
N
W
E
S

AE is the distance between the starting point and the end point.

Now, CD = FB = 30 m, BC = DF = 20 m, AB = 90 m

AF = AB − FB = 90 − 30 = 60 m, ED = 100 m

EF = ED − DF = 100 − 20 = 80 m

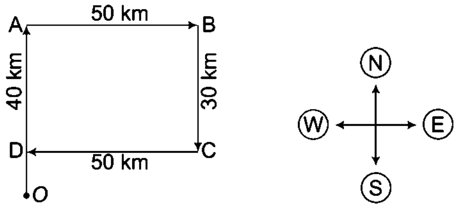
∴ Required distance,

AE $= \sqrt{(AF)^2 + (EF)^2}$ (by Pythagoras theorem)

$= \sqrt{(60)^2 + (80)^2} = \sqrt{3600 + 6400}$

$= \sqrt{10000} = 100$ m

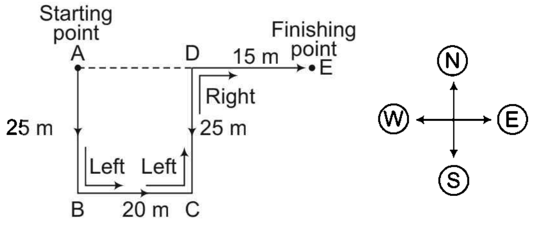
37. (*a*) According to the question, the direction diagram will be as follows


A
50 km
B
40 km
30 km
D
50 km
C
O
N
W
E
S

Now, AB = CD = 50 km, OA = 40 km

∴ Required distance, OD = OA − AD = 40 − 30 = 10 km

38. (*c*) According to the question, the direction diagram will be as follows


Starting
point
A
D
15 m
Finishing
point
E
Right
25 m
25 m
Left
Left
B
20 m
C
N
W
E
S

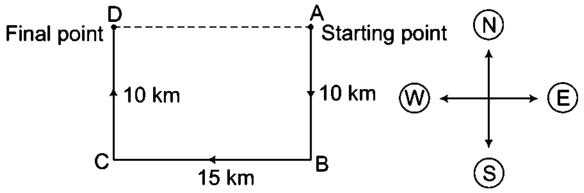
Now, AB = CD = 25 m, BC = AD = 20 m, DE = 15 m

∴ Required distance, AE = AD + DE

AE = (20 + 15) = 35 m

Also, E is to the East of A.

39. (*d*) Let A be the starting point.

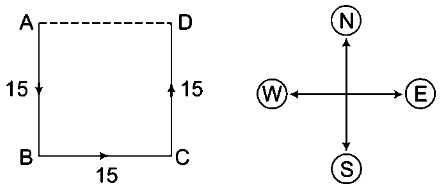

D
A
Final point
Starting point
10 km
10 km
C
B
15 km
N
W
E
S

At last he reaches D passing B and C.

∴ Shortest distance between the points A and D

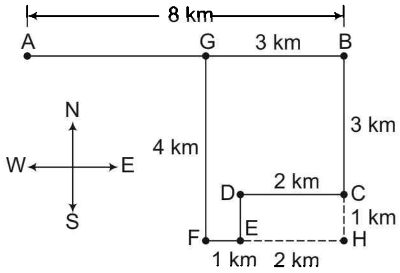
= AD = BC = 15 km

40. (*b*) Let Sharada starts from point A and passing through B and C, she reaches D.


A
D
15
15
B
C
15
N
W
E
S

Clearly, she is in East and at a distance of 15 m from her original position.

41. (*a*)

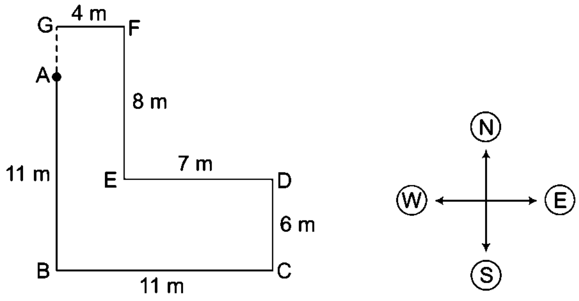

8 km
A
G
3 km
B
N
W
E
S
4 km
3 km
2 km
D
C
E
1 km
F
H
1 km
2 km

Let point A is the starting point and G is the final point of the boy.

Now, distance between starting point and final point

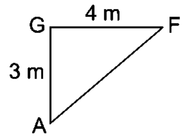
(AG) = AB − BG = (8 − 3) km = 5 km

Solutions (Q. Nos. 42-43)


4 m
G
F
A
8 m
11 m
E
7 m
D
6 m
B
C
11 m
N
W
E
S

42. (*e*) AG = BG − AB = (CD + EF) − (AB) = (6 + 8) − 11 = 3 m

and GF = 4 m

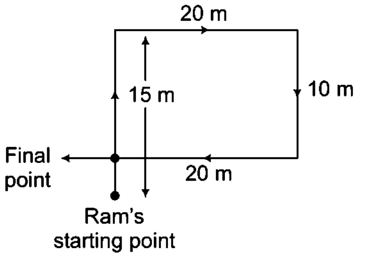


∴ $AF = \sqrt{(AG)^2 + (GF)^2} = \sqrt{9 + 16} = 5$ m

43. (*a*) Point G is in the 'North' direction from point A.

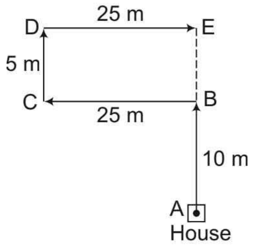
and AG = 3m (from above solution)

44. (*a*)


20 m
15 m
10 m
Final point
20 m
Ram's starting point

Thus, Ram is at a distance of 5 m from his starting point.

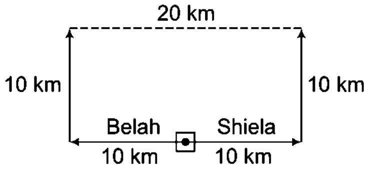
45. (*a*)


D
25 m
E
5 m
C
25 m
B
10 m
A
House

DC = EB = 5m

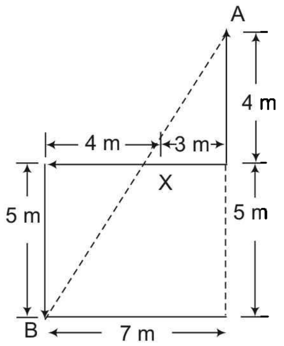
∴ Required distance = AE = AB + BE = 10 + 5 m = 15 m

46. (*d*)


20 km
10 km
10 km
Belah
Shiela
10 km
10 km

∴ Required distance = 10 + 10 = 20 km

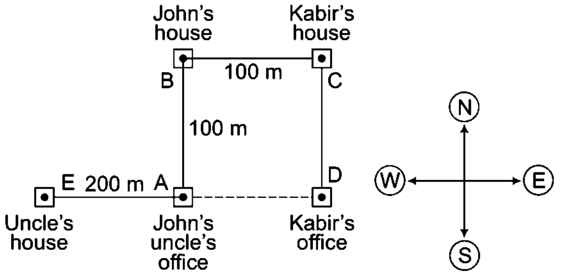
47. (*d*)


A
4 m
4 m
3 m
X
5 m
5 m
B
7 m

Required distance, AB = $\sqrt{7^2 + 9^2}$

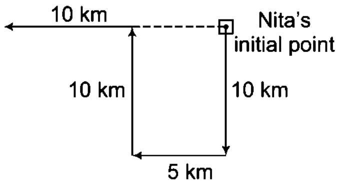
= $\sqrt{130}$ = 11.40 m

48. (*b*)


John's house
Kabir's house
B
100 m
C
100 m
E
200 m
A
D
Uncle's house
John's uncle's office
Kabir's office
N
W
E
S

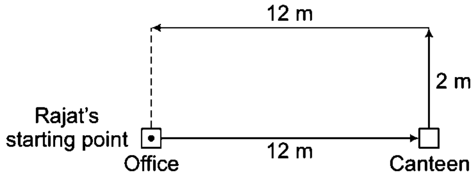
∴ Required distance = 200 + 100 = 300 m

49. (*b*) According to the question, the direction diagram is as follows


10 km
Nita's
initial point
10 km
10 km
5 km

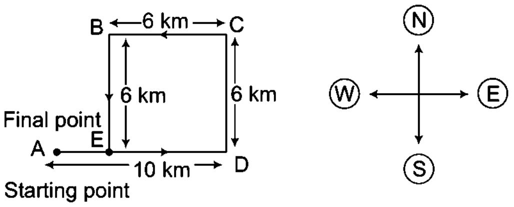
∴ Required distance = 10 + 5 = 15 km

50. (*d*)


12 m
2 m
Rajat's
starting point
12 m
Office
Canteen

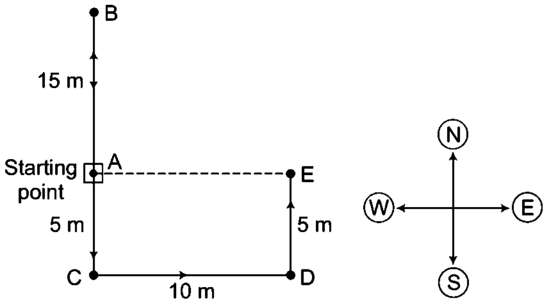
∴ Required distance = 2 m

51. (*a*) Let the starting point of Nassebah be 'A'.


B
6 km
C
6 km
6 km
Final point
A
E
10 km
D
Starting point
N
W
E
S

∴ Required distance, AE = AD − ED = 10 − 6 = 4 km

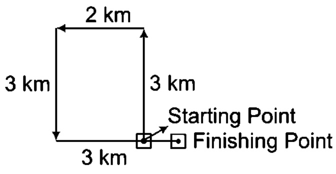
52. (*d*) Let the initial point of Rachel be 'A'.


B
15 m
Starting
point
A
E
5 m
5 m
C
10 m
D
N
W
E
S

∴ Required distance, AE = 10 m

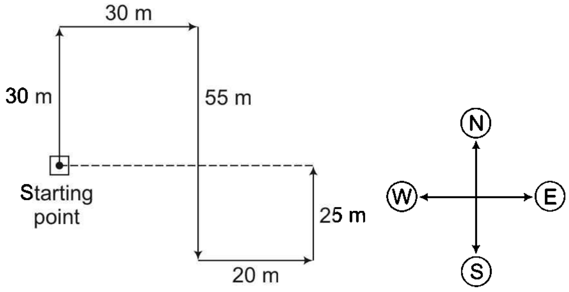
So, Rachel is 10 m towards East from the starting point.

53. (*a*) According to the question, we have the following direction diagram


2 km
3 km
3 km
Starting Point
Finishing Point
3 km

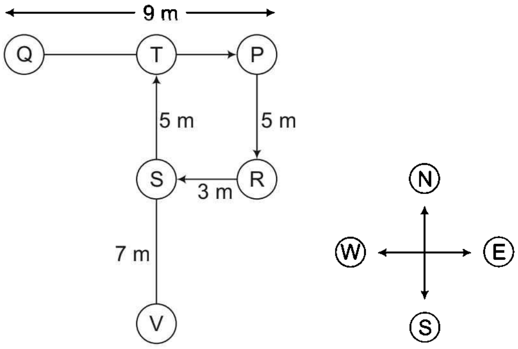
∴ Required distance = 1 km

54. (*b*)


30 m
30 m
55 m
Starting
point
25 m
20 m
N
W
E
S

∴ Required distance = 30 + 20 = 50 m

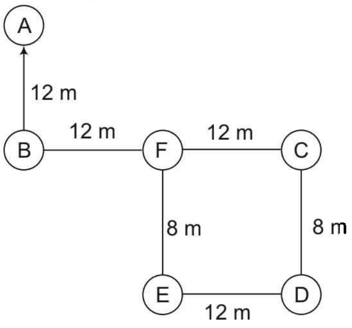
Solutions (Q. Nos. 55-56)


9 m
Q
T
P
5 m
5 m
S
3 m
R
7 m
V
N
W
E
S

55. (*d*) If a person walks in a straight line for 8 m towards West from point R, then he would cross S.

56. (*e*) S, V, T are in straight line.

Solutions (Q. Nos. 57-58)


A
12 m
B
12 m
F
12 m
C
8 m
8 m
E
12 m
D

57. (*d*)

58. (*a*) The point F is 12 m West of point C.

Master Exercise

Take a Leap...

1. A man goes towards East 5 km, then he takes a turn to South-West and goes 5 km. He again takes a turn towards North-West and goes 5 km With respect to the point from where he started, where is he now?

(a) At the starting point (b) In the West
(c) In the East (d) In the North-East

2. Nikhil walked 30 m towards East took a left turn and walked 20 m. He again took a left turn and walked 30 m. How far and in which direction is he from his starting point? **[BOI (PO) 2010]**

(a) 20 m, North (b) 80 m, North
(c) 20 m, South (d) 80 m, South
(e) Data inadequate

3. Rakesh is standing at a point. He walks 20 m towards the East and further 10 m towards the South, then he walks 35 m towards the West and further 5 m towards the North, then he walks 15 m towards the East. What is the straight distance (in m) between his starting point and the point where he reached last?

(a) 0 (b) 5
(c) 10 (d) Cannot be determined

4. Anoop starts walking towards South. After walking 15 m he turns towards North. After walking 20 m, he turns towards East and walks 10 m. He, then turns towards South and walks 5 m. How far is he from his original position in which direction?

(a) 10 m, North (b) 10 m, South
(c) 10 m, West (d) 10 m, East

5. Village Chimur is 20 km to the North of village Rewa. Village Rahate is 18 km to the East of village Rewa. Village Angne is 12 km to the West of Chimur. If Sanjay starts from village Rahate and goes to village Angne, in which direction is he from his starting point?

(a) North (b) North-West
(c) South (d) South-East

6. From a point, Rajneesh started walking East and walked 35 m. He, then turned on his right and walked 20 m and he again turned to right and walked 35 m. Finally, he turned his left and walked 20 m and reached his destination. Now, how far is he from the starting point?

(a) 50 m (b) 55 m (c) 20 m (d) 40 m

7. A rat runs 20 m towards East and turns to right, then runs 10 m and turns to right, runs 9 m and again turns to left, runs 5 m and then turns to left, runs 12 m and finally turns to left and runs 6 m. Now, which direction is the rat facing?

(a) East (b) North
(c) West (d) South

8. Starting from a point S, Mahesh walked 25 m towards South. He turned to his left and walked 50 m. He, then again turned to his left and walked 25 m. He again turned to his left and walked 60 m and reached a point T. How far Mahesh is from point S and in which direction?

(a) 10 m, West (b) 25 m, North
(c) 10 m, East (d) 25 m, West

9. Mohan walked 30 m towards South, took a left turn and walked 15 m. He, then took a right turn and walked 20 m. He again took a right turn and walked 15 m. How far is he from the starting point? **[SBI (PO) 2010]**

(a) 95 m
(b) 50 m
(c) 70 m
(d) Cannot be determined
(e) None of the above

10. Two buses start from the opposite points of a main road, 150 km apart. The first bus runs for 25 km and takes a right turn and then runs for 15 km. It then turns left and runs for another 25 km and takes the direction back to reach the main road. In the mean time, due to the minor break down the other bus has run only 35 km along the main road. What would be the distance between the two buses at this point ? **[CLAT 2014, CMAT 2013]**

(a) 65 km (b) 80 km (c) 75 km (d) 85 km

11. Ravi starts walking towards North. After walking 15 m he turns towards South. After walking 20 m, he turns towards East and walks 10 m. He, then turns towards North and walks 5 m. How far is he from his original position and in which direction?

(a) 10 m, North (b) 10 m, South
(c) 10 m, East (d) 10 m, West

12. Raman starts from point P and walks towards South and stops at point Q. He now takes a right turn followed by a left turn and stops at point R. He finally takes a left turn and stops at point S. If he walks 5 km before taking each turn, towards which direction will Raman have to walk from point S to reach point Q? **[PNB (PO) 2009]**

(a) North (b) South (c) West (d) East

13. Town D is to the West of town M. Town R is to the South of town D. Town K is to the East of town R. Town K is towards which direction of town D? **[Andhra Bank (PO) 2009]**

(a) South (b) East
(c) North-East (d) South-East
(e) None of these

14. Rama travels a distance of 5 km from a place A towards North, turns left and walks 3 km, again turns right and walks 2 km. Finally he turns right and walks 3 km to reach the place B. What is the distance between A and B?

(a) 7 km (b) 13 km (c) 2 km (d) 10 km

15. A started from a place, after walking for 1 km, he turns to the left, then walking for 1/2 km, he again turns to left. Now, he is going Eastward direction. In which direction, did he original start?

(a) West (b) East (c) South (d) North

16. Starting from a point M, Harish walked 18 m towards South. He turned to his left and walked 25 m. He, then turned to his left and walked 25 m. He, then turned to his left and walked 18 m. He again turned to his left and walked 35 m and reached a point P. What is the direction of P in respect of M?

(a) East (b) West
(c) North (d) None of these

17. Shehnaz wants to go to the market. She starts from her home which is in North and comes to the crossing. The road to her left ends in a park and straight ahead is the office complex. In which direction is the market to the crossing?

(a) East (b) West (c) North (d) South

18. The town of Paranda is located on Green lake. The town of Akram is West of Paranda. Tokhada is East of Akram but West of Paranda. Kokran is East of Bopri but West of Tokhada and Akram. If they are all in the same district, which town is the farthest West?

(a) Paranda (b) Kokran (c) Akram (d) Bopri

19. The houses of A and B face each other on a road going North-South, A's being on the western side, A comes out of his house, turns left, travels 5 km, turns right, travels 5 km to the front of D's house. B does exactly the same and reaches the front of C's house. In this context, which one of the following statements is correct? **[UPSC (CSAT) 2011]**

(a) C and D live on the same street
(b) C's house faces South
(c) The houses of C and D are less than 20 km apart
(d) None of the above

20. A window in a house faces East. When the Sun shines through, it shines on the wall opposite. In which direction does the outside of this wall face? **[NIFT (UG) 2012]**

(a) North (b) East
(c) South (d) West

21. Anita drives from point A towards North and travels 30 km. She then turns to her right and travels 4 km and then again turns to the right and drives straight for 30 km. How much distance she has to cover to go straight to the starting point?

(a) 26 km (b) 8 km
(c) 22 km (d) 4 km

Directions (Q. Nos. 22-23) Read the following information carefully to answers the questions that follow.

Two boys Anil and Shyam walk in opposite directions for 3 km. Anil is walking towards East. After 3 km each, both turn right and again walk 3 km each. Both turn to face each other.

22. In which direction is Shyam looking? **[DMRC (CRA) 2012]**

(a) South (b) South-East
(c) East (d) North-West

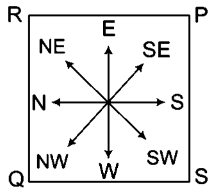
23. In which direction is Anil looking? **[DMRC (CRA) 2012]**

(a) North (b) North-West
(c) West (d) South-East

24. I am standing at the centre of a circular field. I go down South to the edge of the field and then turning the left I walk along the boundary of the field equal to three-eighths of its length. Then, I turn left and go right across to the opposite point on the boundary. In which direction am I from the starting point?

(a) North-West
(b) North
(c) South-West
(d) West

Directions (Q. Nos. 25-28) Read the following information carefully and answer the questions given below.



Four security guards P, Q, R and S have been posted at the four corners of a huge cashew plantations farm as show in the above figure.

25. Given the condition that none of the corners should be unmanned and both P and R start moving towards diagonally opposite corners, in which direction should S start moving, so that he occupies a corner by travelling the minimum possible distance?

(a) Clockwise
(b) Anti-clockwise
(c) Either clockwise or anti-clockwise
(d) None of the above

26. From the original position, P and Q move one arm length clockwise and then cross over to the corner diagonally opposite, R and S move one arm length anti-clockwise and cross over to the corner diagonally opposite. The original setting PSQR has now changed to

(a) RSPQ (b) SRPQ
(c) RQSP (d) None of these

27. From the original position, P and R move diagonally to opposite corners and then one side each in the clockwise direction. Which of the corners is unmanned at the moment?

(a) South-West
(b) South-East
(c) North-East
(d) North-West

28. After the movement in 25, who is at the North-West corner?

(a) Q Only (b) Q and R (c) P and Q (d) S and R

29. Kailash faces towards North. Turning to his right, he walks 25 m. He turns to his left and walks 30 m. Next, he moves 25 m to his right. He, then turns to his right again and walks 55 m. Finally, he turns to the right and moves 40 m. In which direction he is now from his starting point? **[CMAT 2014]**

(a) South-West
(b) South
(c) North-West
(d) South-East

30. One morning after sunrise, Suraj was standing facing a pole. The shadow of the pole fell exactly to his right. Which direction was Suraj facing? **[CLAT 2014]**

(a) West (b) South
(c) East (d) Data inadequate

31. One evening. Raja started to walk towards the Sun. After walking a while, he turned to his right and again to his right. After walking a while, he again turned right. In which direction is he facing? **[SSC (CGL) 2011]**

(a) South (b) East (c) West (d) North

32. Five boys A, B, C, D and E are sitting in a park in a circle. A is facing South-West, D is facing South-East, B and E are right opposite A and D respectively and C is equidistant between D and B. Which direction is facing? **[SSC (CGL) 2011]**

(a) West (b) South (c) North (d) East

33. Daily in the morning the shadow of Gol Gumbaz falls on Bara Kaman and in the evening the shadow of Bara Kaman falls on Gol Gumbaz exactly. So in which direction is Gol Gumbaz to Bara Kaman? **[SSC (CPO) 2011]**

(a) Eastern side (b) Western side
(c) Northern side (d) Southern side

34. Y is in the East of X which is in the North of Z. If P is in the South of Z, then in which direction of Y is P? **[SSC (CGL) 2013]**

(a) North (b) East
(c) South-East (d) South-West

35. At dusk, Rohit started walking facing the Sun. After a while, he met his friend and both turned to their left. They halted for a while and started moving by turning again to their right. Finally Rohit waved 'good bye' to his friend and took a left turn at a corner. which direction is Rohit moving now? **[SSC (Constable) 2013]**

(a) South (b) West (c) North (d) East

36. Debu walks towards East, then towards North and turning 45° right walks for a while and lastly turns towards left. In which direction is he walking now? **[SNAP 2008]**

(a) North (b) East
(c) South-East (d) North-West

37. Prakash walked 30 m towards West, took a left turn and walked 20 m. He again took a left turn and walked 30 m. He then took a right turn and stopped. Towards which direction was he facing when he stopped? **[UBI (Clerk) 2010]**

(a) South (b) North
(c) East (d) Data inadequate
(e) None of the above

38. Mahu goes 40 km North, turns right and goes 80 km, turns right again and goes 30 km. in the end, he turns right again and goes 80 km. How far is he from his starting point if he goes straight ahead another 50 km and turns left to go his last 10 km? **[MAT 2014]**

(a) 30 km (b) 30 km (c) 40 km (d) 50 km

39. Immediately after leaving his house, Ritvik turned right and walked for 40 m. Then, he turned left and walked for 20 m. Then, he again took a left turn and walked for 30 m. There he met a friend and turned right to go to the coffee shop 20 m away. After having coffee, he walked back straight for 40 m in the direction he had come from. How far is he from his house? **[IIFT 2012]**

(a) 20 m (b) 0 m (c) 10 m (d) 40 m

40. Mr Raghav went in his car to meet his friend John. He drove 30 km towards North and then 40 km towards West. He then turned to South and covered 8 km. Further he turned to East and moved 26 km. Finally the turned right and drove 10 km and then turned left to travel 19 km. How far and in which direction is he from the starting point? **[IIFT 2009]**

(a) East of starting point, 5 km
(b) East of starting point, 13 km
(c) North East of starting point, 13 km
(d) North East of starting point, 5 km

41. Rahul started from point A and travelled 8 km towards the North to point B, he then turned right and travelled 7 km to point C, from point C he took the first right and drove 5 km to point D, he took another right and travelled 7 km to point E and finally turned right and travelled for another 3 km to point F. What is the distance between point F and B? **[UBI (Clerk) 2010]**

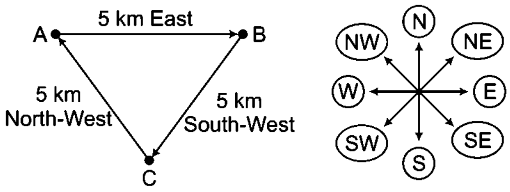
(a) 1 km (b) 2 km
(c) 3 km (d) 4 km
(e) None of these

42. 'K' walked 5 m towards North, took a left turn and walked for 10 m. He then took a right turn and walked for 20 m and again took right turn and walked 10 m. How far he is from the starting point?
[Vijaya Bank (Clerk) 2010, Canara Bank (Clerk) 2010]

(a) 20 m (b) 15 m
(c) 25 m (d) 30 m
(e) None of these

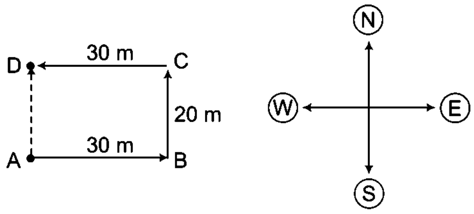
Response & Interpretations (Master Exercise)

1. (*a*) According to the question, the direction diagram is as follows



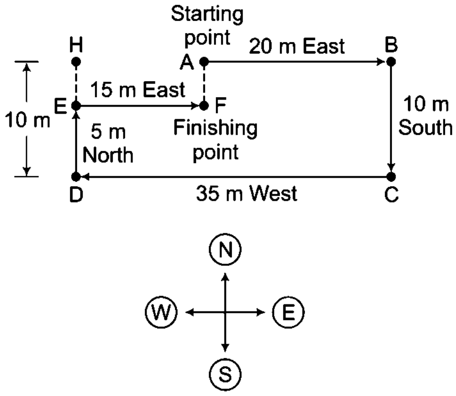
It is clear from the diagram that both starting and finishing point are same *i.e.*, the man is at starting point 'A'.

2. (*a*) According to the question, the direction diagram is as follows



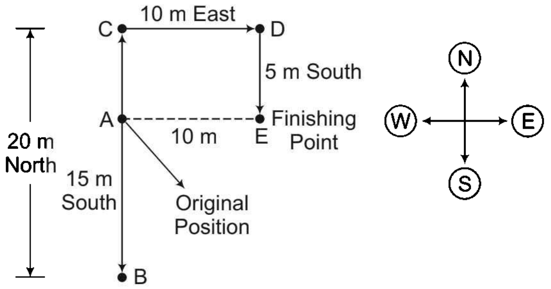
Required distance = AD = BC = 20 m
So, Nikhil is 20 m North from his stating point

3. (*b*) According to the question. The direction diagram is as follows



From diagram, AB = 20 m
BC = HD = 10 m
ED = 5 m
CD = 35 m
HE = AF
∴ Required distance, AF = HE = HD − ED
= 10 − 5 = 5 m

4. (*d*) According to the question, the direction diagram is as follows

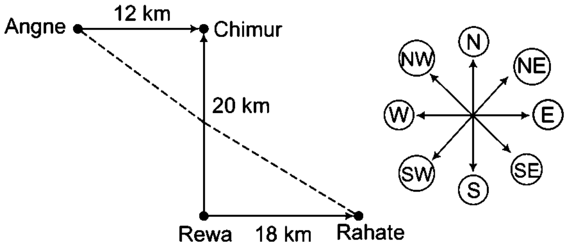

10 m East
C
D
5 m South
Finishing Point
A
10 m
E
20 m North
15 m South
Original Position
B
N
W
E
S

A = Original position, E = Finishing point

BC = 20, AB = 15 m, AC = ED = 5 m, CD = AE = 10 m

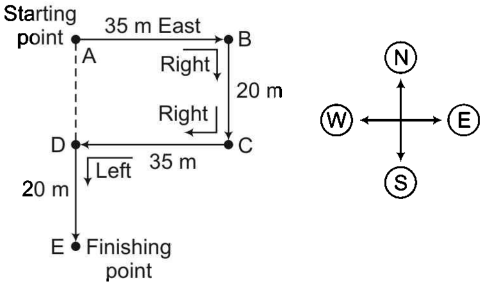
Clearly, at finishing point E, Anoop is 10 m East from original position A.

5. (*b*) According to the question, the direction diagram will be as follows


Angne
12 km
Chimur
20 km
Rewa
18 km
Rahate
N
NW
NE
W
E
SW
SE
S

Clearly, Sanjay will go North-West starting from Rahate to reach Angne.

6. (*d*) According to the question, the direction diagram is as follows


Starting point
35 m East
A
B
Right
20 m
Right
D
C
Left
35 m
20 m
E
Finishing point
N
W
E
S

AB = CD = 35 m

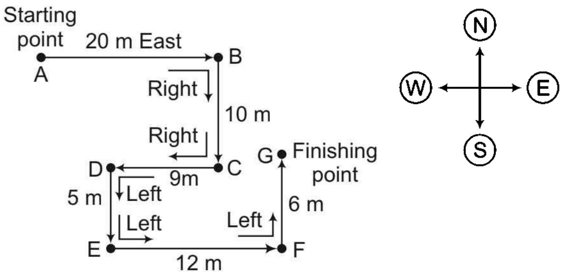
BC = AD = 20 m

DE = 20 m

∴ Required distance, AE = AD + DE

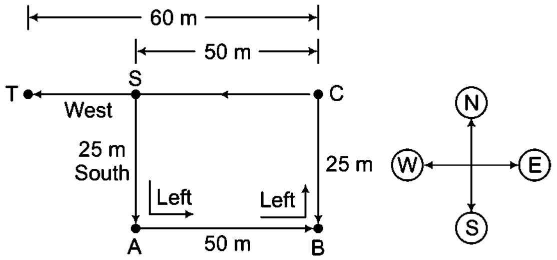
= 20 + 20 = 40 m

7. (*b*) According to the question, the direction diagram is as follows


Starting point
20 m East
A
B
Right
10 m
Right
D
9m
C
G
Finishing point
5 m
Left
Left
Left
6 m
E
12 m
F
N
W
E
S

Clearly, the rat is facing North at finishing point.

8. (*a*) According to the question, the direction diagram is as follows


60 m
50 m
T
S
C
West
25 m South
25 m
Left
Left
A
50 m
B
N
W
E
S

S = Starting point, T = Finishing point

AS = BC = 25 m

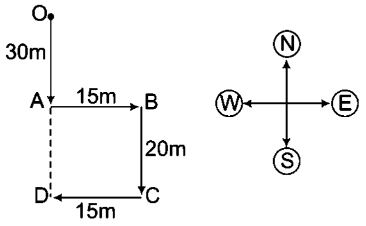
AB = SC = 50 m

CT = 60 m

∴ Required distance, ST = CT − SC = 60 − 50 = 10 m

Clearly, at point T, Mahesh is 10 m West from S.

9. (*b*)

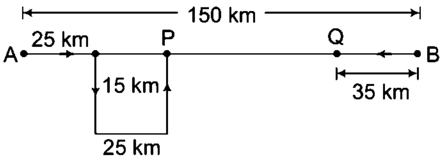

O
30m
A
15m
B
20m
D
C
15m
N
W
E
S

Required distance = OD = OA + AD = OA + BC

(∵ AD = BC)

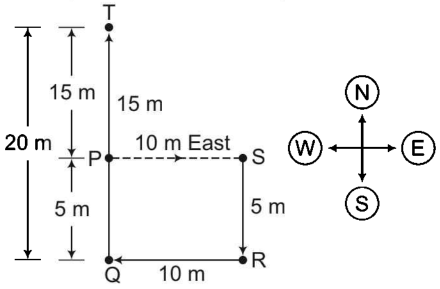
= 30 + 20 = 50 m

10. (*a*)


150 km
25 km
P
Q
A
B
15 km
35 km
25 km

∴ Required distance = PQ = 150 − (25 + 25 + 35) = 65 km

11. (*c*) According to the question, direction diagram is as follows


T
15 m
15 m
20 m
10 m East
P
S
5 m
5 m
Q
10 m
R
N
W
E
S

P = Starting point

S = Finishing point

PS = QR = 10 m

TQ = 20 m

TP = 15 m

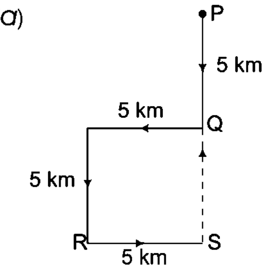
PQ = SR = 5 m

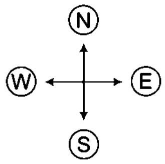
Now, it is clear from the diagram,

Required distance, PS = 10 m

Clearly, at finishing point S, Ravi is 10 m East from starting point P.

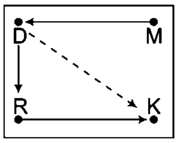
12. (*a*)

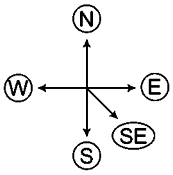

P
5 km
5 km
Q
5 km
R
5 km
S



Hence, Q lies North of S.

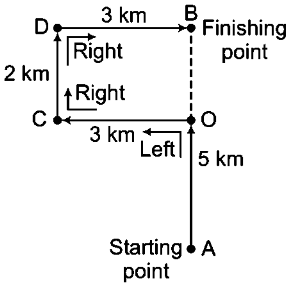
13. (*d*) According to the question, the direction diagram is as follows

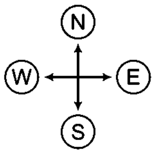




Hence, K is towards South-East of town D.

14. (*a*) According to the question, the direction diagram is as follows


D
3 km
B
Finishing point
Right
2 km
Right
C
O
3 km
Left
5 km
Starting point
A



CD = OB = 2 km

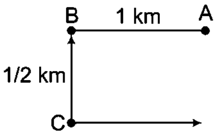
OC = BD = 3 km

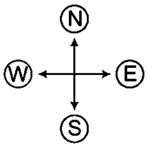
AO = 5 km

∴ Required distance, AB = AO + OB

= 5 + 2 = 7 km

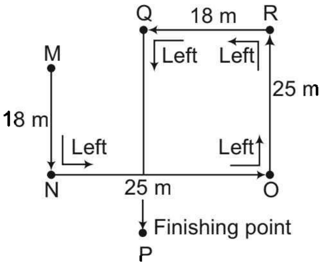
15. (*a*) According to the question, the direction diagram is as follows

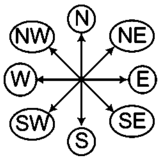

B
1 km
A
1/2 km
C



Clearly, A started from West.

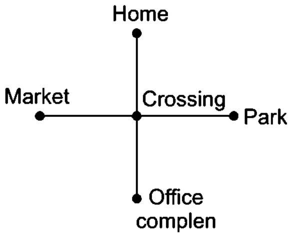
16. (*d*) According to the question, the direction diagram is as follows

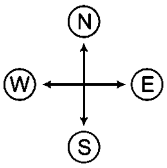

Q
18 m
R
M
Left
Left
25 m
18 m
Left
Left
N
25 m
O
Finishing point
P


N
NW
NE
W
E
SW
SE
S

Clearly, the direction of P is South-East in respect of M.

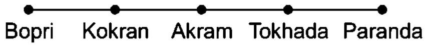
17. (*b*) According to the question, the direction diagram is as follows

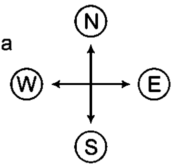

Home
Market
Crossing
Park
Office
complen



Clearly, market is to West of crossing.

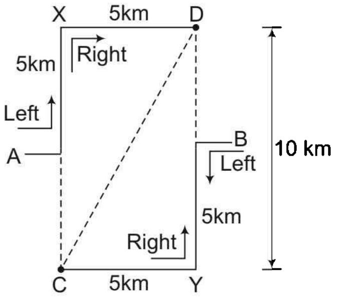
18. (*d*)


Bopri
Kokran
Akram
Tokhada
Paranda



Clearly, Bopri is the farthest West.

19. (*c*) According to the question, the direction diagram will be as follows


X
5km
D
5km
Right
Left
A
B
Left
10 km
5km
Right
C
5km
Y

Now, AX = DB = BY = CA = 5 km, XD = CY = 5 km

XC = XA + AC = 5 + 5 = 10 km

∴ Distance between C and D, *i.e.*,

$$CD = \sqrt{(XD)^2 + (XC)^2} \quad \text{(by Pythagoras theorem)}$$

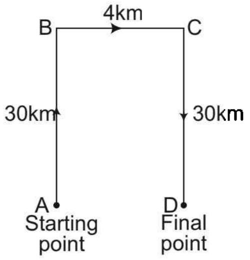
$$= \sqrt{5^2 + 10^2} = \sqrt{25 + 100}$$

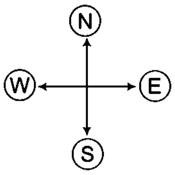
$$= \sqrt{125} = 5\sqrt{5} = 5 \times 2.23 = 11.15 \text{ km}$$

So, it is clear from the figure that the houses of C and D are less than 20 km apart.

20. (*d*) It is clear that as the window faces East, the direction of the walls face on which the sunshine falls is towards East. So, the outside of this wall faces in the opposite direction *i.e.*, West.

21. (*d*) According to the question, the direction diagram will be as follows

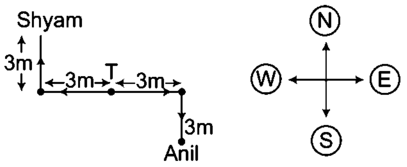

B
4km
C
30km
30km
A
Starting point
D
Final point



Now, AB = CD = 30 km, BC = AD = 4 km

∴ Required distance, AD = 4 km

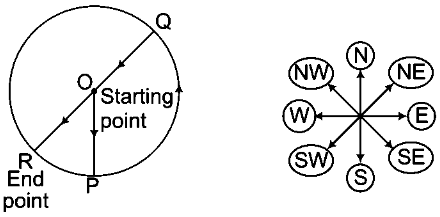
22. (*b*)


Shyam
3m
3m
T
3m
3m
Anil
N
W
E
S

From the above diagram, it is clear that, Shyam is looking in South-East direction.

23. (*b*) From the above diagram Anil is looking in North-West direction.

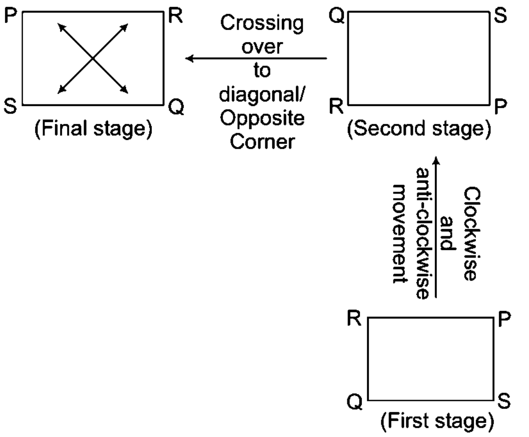
24. (*c*) According to the question, the direction diagram will be as follows


Q
O
Starting point
R
End point
P
N
NW
NE
W
E
SW
SE
S

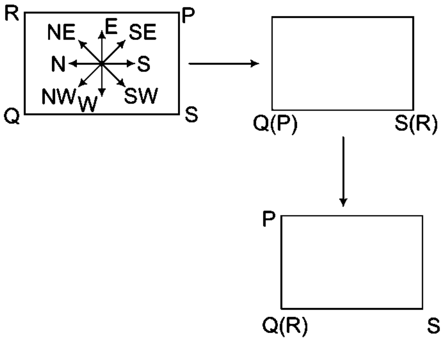
From the above diagram, it is clear that I am in the South-West direction from the starting point.

25. (*b*) When P and R move towards diagonally opposite coners the two top positions become vacant. Hence, in order S should travel minimum distance, he should move anti-clockwise to accupy P's position.

26. (*c*) Original setting of PSQR change to RQSP, as shown below:


P
R
S
Q
(Final stage)
Crossing over to diagonal/ Opposite Corner
Q
S
R
P
(Second stage)
Clockwise and anti-clockwise movement
R
P
Q
S
(First stage)

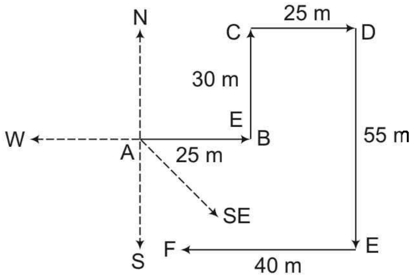
27. (*b*) Final positions of PSQR is shown below :


R
P
NE
E
SE
N
S
NW
W
SW
Q
S
Q(P)
S(R)
P
Q(R)
S

It is clear from the figure that the position in South-East (old position of P) remains unmanned.

28. (*c*) At the North-West position, Q and P are there.

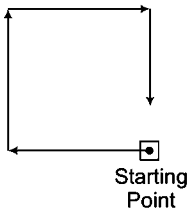
29. (*d*)


N
C
25 m
D
30 m
E
B
55 m
W
A
25 m
SE
S
F
40 m
E

A is the initial or starting point of Kailash and F is the destination or final point of Kailash. F is to the South-East of A. So, he is to the South-East from his initial point.

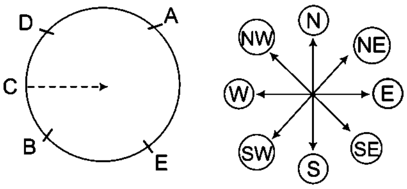
30. (*b*) Sun rises in the East in the morning. So, in the morning the shadow falls towards the West. Now, pole's shadow falls in to Suraj's right. So, he is standing facing South.

31. (*a*)


Starting Point

It is clear from the diagram that Raja is now facing towards South.

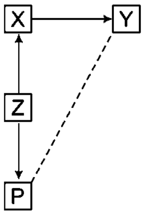
32. (*d*)


D
A
C
B
E
N
NW
NE
W
E
SW
SE
S

Clearly, C is facing towards East.

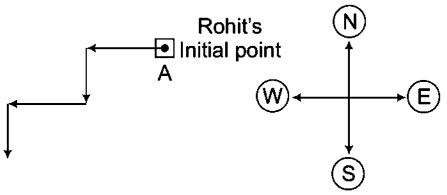
33. (*a*) In the morning an object casts its shadow to the West. and in the evening an object casts its shadow to the East. Therefore, Gol Gumbaz is to the Eastern side of Bara Kaman.

34. (*d*)



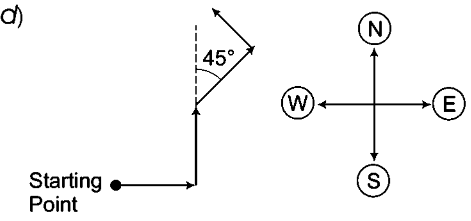
Clearly P is in South-West direction with respect to Y.

35. (*a*) At dusk, Sun will be in the West.


Rohit's Initial point
A
N
W
E
S

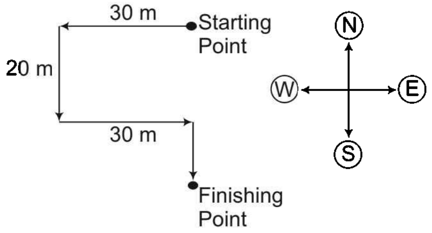
Clearly, Rohit is moving towards South.

36. (*d*)


45°
Starting Point
N
W
E
S

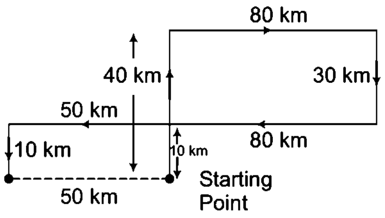
Clearly, debu is walking in North-West direction

37. (*a*)


30 m
Starting Point
20 m
30 m
Finishing Point
N
W
E
S

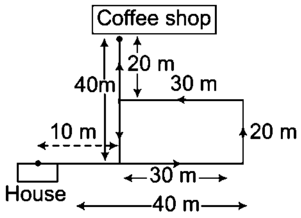
Clearly, he was facing South.

38. (*d*) According to the question, the direction diagram is as follows


80 km
40 km
30 km
50 km
10 km
10 km
80 km
50 km
Starting Point

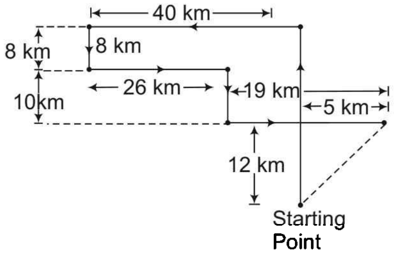
Clearly, he is 50 km far from his starting point.

39. (*c*)


Coffee shop
20 m
40m
30 m
10 m
20 m
House
30 m
40 m

∴ Required distance = 40 − 30 = 10 m

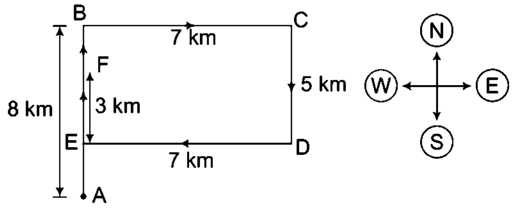
40. (*c*)


40 km
8 km
8 km
10 km
26 km
19 km
5 km
12 km
Starting Point

∴ Required distance $= \sqrt{(12)^2 + (5)^2}$

$= \sqrt{169} = 13$ km North-East

41. (*b*) Rahul's walking directions are


B
C
7 km
F
5 km
8 km
3 km
E
D
7 km
A
N
W
E
S

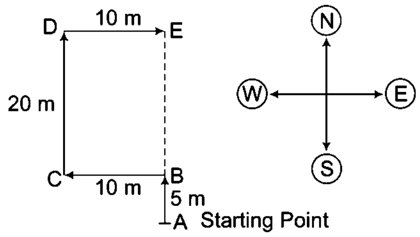
Here, AB = 8 km, BC = 7 km

CD = 5 km, DE = 7 km

EF = 3 km = BE = 5 km.

Hence, BF = BE − EF = 5 − 3 = 2 km

42. (*c*)


D
10 m
E
20 m
C
10 m
B
5 m
A
Starting Point
N
W
E
S

∵ DC = BE = 20 m

Hence, AB + BE = 5 + 20 = 25 m

15

Sitting Arrangement

Questions based on 'Sitting Arrangement' involve arranging the persons/objects according to the conditions given in the question.

Different types of questions covered in this chapter are as follows

- Linear Arrangement
- Circular Arrangement
- Polygonal Arrangement

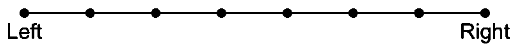
Sitting arrangement questions are based on the sitting sequence pattern, direction, facing outside or inside etc. The candidate is required to understand all the conditions given in the question as the given information may be in jumbled form. The candidate has to segregate this information and make the arrangement as per the given conditions.

Arrangement may be along a straight line (row) or along shapes like circle, triangle, rectangle etc.

Based on the various patterns of sitting arrangement, they can be divided into the following types

Type 1 Linear Arrangement

In linear arrangement, persons/objects are required to be placed in proper order in a straight line.



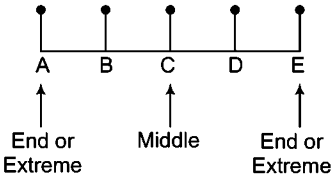
One is required to identify the exact position of the objects and their positions with respect to one another based on the information given.

Steps to Solve Linear Arrangement Problems

(i) Identify the number of objects and their names.
(ii) Use a pictorial method to represent the objects and their positions.
(iii) Filter the information to come up with relevant facts about other positions and try to come up with a unique solution.
(iv) Answer the questions based on the arrangement determined above.

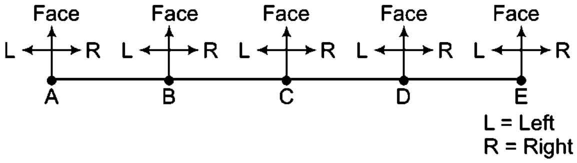
The linear arrangement can further be of two types, based on the number of rows

1. **One Row Sequence** In such an arrangement, objects/persons are placed in a single row as shown below.



Case I In the above arrangement, if direction of face is not given, then we should take ourself as a base to determine left and right of the objects/persons. In other words, we can say that in such cases our left and right are the left and right of the objects/persons.

Let us see



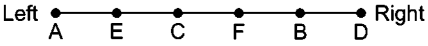
From the above diagram, it is clear that,

(i) B, C, D, E are to the right of A but only B is to the immediate right of A.
(ii) D, C, B, A are to the left of E but only D is to the immediate left of E.
(iii) C, D, E are to the right of B but only C is to the immediate right of B.
(iv) C, B, A are to the left of D but only C is to the immediate left of D.
(v) D and E are to the right of C but only D is to the immediate right of C.
(vi) B and A are to the left of C but only B is to the immediate left of C.
(vii) A is to the immediate left of B while E is to the immediate right of D.

***Ex* 1** 6 persons are sitting in a row. They are A, B, C, D, E and F. C is not sitting beside D who is sitting on the extreme right. E is between A and C. A is not sitting beside F and D. B is between F and D. Who is immediate right of A?

(a) B (b) C (c) D (d) E

Sol. (*d*) Arrangement of persons, according to the question, is as follows

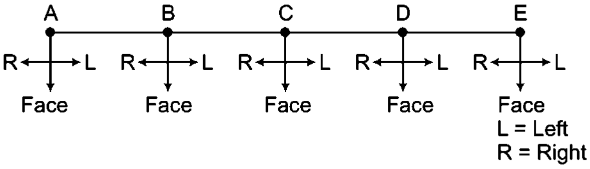


Clearly, E is sitting to the immediate right of A.

Case II If direction of face is given, then left and right is taken according to the given direction of face.

e.g., If 5 students are sitting in a row and their faces are towards you, then in this case, the direction of faces of students is opposite to the direction of your face.

Let us see



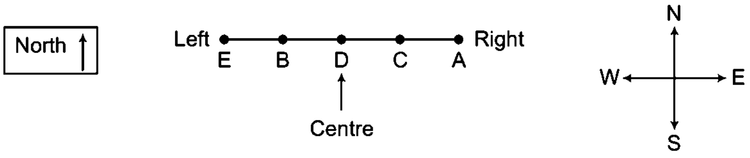
From the above diagram, it is clear that

(i) Left of A = B, C, D and E
(ii) Right of E = D, C, B and A
(iii) B is immediate left of A, C is immediate left of B, D is immediate left of C and E is immediate left of D.
(iv) D is immediate right of E, C is immediate right of D, B is immediate right of C and A is immediate right of B.

***Ex* 2** 5 persons A, B, C, D and E are sitting in a row facing North such that D is on the left of C and B is on the right of E. A is on the right of C and B is on the left of D. If E occupies a corner position, then who is sitting in the centre?

(a) A (b) B (c) C (d) D

Sol. (*d*) Arrangement according to the question is as follows

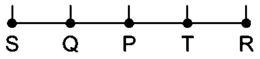


Clearly, D is sitting in the centre.

***Ex* 3** There are five houses P, Q, R, S and T. P is right of Q and T is left of R and right of P. Q is right of S. Which house is in the middle? **[IIFT 2013]**

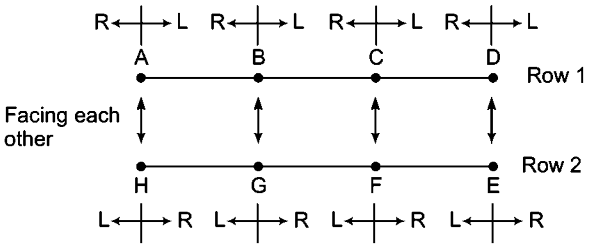
(a) P (b) Q (c) T (d) R

Sol. (*a*) According to the question, the houses can be arranged



Clearly, the house P is in the middle of all the houses.

2. **Two Row Sequence** In such arrangement, objects/persons are arranged in two different rows facing each other as follows



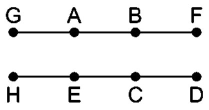
From the above diagram, it is clear that

(i) A is sitting opposite to H.
(ii) B is sitting opposite to G.
(iii) C is sitting opposite to F.
(iv) D is sitting opposite to E.
(v) A and E are sitting at diagonally opposite positions.
(vi) D and H are sitting at diagonally opposite positions.

***Ex* 4** 8 persons A, B, C, D, E, F, G and H are sitting in two rows opposite to each other. Each row has 4 persons. B and C are sitting in front of each other. C is between D and E. H is sitting to the immediate left of E. H and F are diagonally opposite. G and B are not near to each other. Who is in front of A?

(a) E (b) D (c) C (d) B

Sol. (*a*) Arrangement of persons, according to the question, is as follows



Clearly, E is in front of A.

Practice Corner **15.1**

Build your Confidence...

1. 5 friends are sitting on a bench. A is to the left of B but on the right of C. D is to the right of B but on the left of E. Who are at the extremes? **[SSC (CPO) 2012]**

(a) A, B (b) A, D (c) B, D (d) C, E

2. In a college party, 5 girls are sitting in a row. P is to the left of M and to the right of O. R is sitting to the right of N but to the left of O, Who is sitting in the middle? **[SSC (CGL) 2010]**

(a) O (b) R (c) P (d) M

3. Five boys A, B, C, D and E are standing in a row. D is on the right of E. B is on the left of E but on the right of A. D is on the left of C, who is standing on the extreme right. Who is standing in the middle? **[SSC (10+2) 2013]**

(a) B (b) C (c) D (d) E

4. Five boys A, B, C, D and E are sitting in a row. A is to the right of B and E is to the left of B but to the right of C. A is to the left of D. Who is second from the left end? **[UP B.Ed. 2011]**

(a) D (b) A (c) E (d) B

5. There are five different houses, A to E, in a row. A is to the right of B and E is to the left of C and right of A, B is to the right of D. Which of the houses is in the middle? **[IB (ACIO) 2013]**

(a) A (b) B (c) C (d) D

6. Five friends P, Q, R, S and T are sitting in a row facing North. Here, S is between T and Q and Q is to the immediate left of R. P is to the immediate left of T. Who is in the middle? **[SSC (Multitasking) 2014]**

(a) S (b) T (c) Q (d) R

7. Six children A, B, C, D, E and F are standing in a row. B is between F and D. E is between A and C. A does not stand next to either F or D. C does not stand next to D. F is between which of the following pairs of children? **[SSC (FCI) 2012]**

(a) B and E (b) B and C (c) B and D (d) B and A

8. There are eight books kept one over the other. Two books are on Organisational Behaviour, two books on TQM, three books on Industrial Relations and one book is on Economics. Counting from the top, the second, fifth and sixth books are on Industrial Relations. Two books on Industrial Relations are between two books on TQM. One book of Industrial Relations is between two books on Organisational Behaviour while the book above the book of Economics is a book of TQM. Which book is the last book from the top? **[MAT 2011]**

(a) Economics (b) TQM
(c) Industrial Relations (d) Organisational Behaviour

9. Five boys are standing in a row facing East. Pavan is to the left of Tavan, Vipin, Chavan. Tavan, Vipin and Chavan are to the left of Nakul. Chavan is between Tavan and Vipin. If Vipin is fourth from the left, then how far is Tavan from the right? **[CLAT 2014]**

(a) First (b) Second (c) Third (d) Fourth

10. Six persons M, N, O, P, Q and R are sitting in two rows with three persons in each row. Both the rows are in front of each other. Q is not at the end of any row. P is second to the left of R. O is the neighbour of Q and diagonally opposite to P. N is the neighbour of R. Who is in front of N? **[USPC (CSAT) 2011]**

(a) R (b) Q (c) P (d) M

11. Six persons A, B, C, D, E and F are sitting in two rows, three in each row. **[MAT 2011]**

I. E is not at the end of any row.
II. D is second to the left of F.
III. C, the neighbour of E, is sitting diagonally opposite to D.
IV. B is the neighbour of F.

Which of the following are in one of the two rows?

(a) D, B and F (b) C, E and B (c) A, E and F (d) F, B and C

Direction (Q. No. 12) Read the following information carefully and answer the question that follows. **[RRB (TC/CC) 2010]**

Five boys A_1, A_2, A_3, A_4 and A_5 are sitting on a stair in the following way

I. A_5 is above A_1.
II. A_4 is under A_2.
III. A_2 is under A_1.
IV. A_4 is between A_2 and A_3.

12. Who is at the lowest position of the stair?

(a) A_1 (b) A_3 (c) A_5 (d) A_2

13. Five children are sitting in a row. S is sitting next to P but not T. K is sitting next to R, who is sitting on the extreme left and T is not sitting next to K. Who is/are sitting adjacent to S? **[NIFT (UG) 2014]**

(a) K and P (b) R and P (c) Only P (d) P and T

14. Five senior citizens are living in a multistoried building. Mr Muan lives in a flat above Mr Ashokan, Mr Lokesh lives in a flat below Mr Gaurav, Mr Ashokan lives in a flat above Mr. Gaurav and Mr Rakesh lives in a flat below Mr Lokesh. Who lives in the topmost flat? **[MAT 2013]**

(a) Mr Lokesh (b) Mr Gaurav (c) Mr Muan (d) Mr Rakesh

15. In a gathering seven members are sitting in a row. 'C' is sitting left to 'B' but on the right to 'D'. 'A' is sitting right to 'B'. 'F' is sitting right to 'E' but left to 'D'. 'H' is sitting left to 'E'. Find the person sitting in the middle.

[SSC (10+2) 2013]

(a) C (b) D
(c) E (d) F

Directions (Q. Nos. 16-20) Study the following information carefully to answer the given questions. **[GIC 2012]**

A, B, C, D, E, F, G and H are seated in straight line facing North. C sits fourth to left of G. D sits second to right of G. Only two people sit between D and A. B and F are immediate neighbours of each other. B is not an immediate neighbour of A. H is not an immediate neighbour of D.

16. Who amongst the following sits exactly in the middle of the persons who sit fifth from the left and the person who sits sixth from the right?

(a) C (b) H (c) E (d) F

17. Who amongst the following sits third to the right of C?

(a) B (b) F (c) A (d) E

18. Which of the following represents persons seated at the two extreme ends of the line?

(a) C, D (b) A, B (c) B, G (d) D, H

19. What is the position of H with respect to F?

(a) Third to the left (b) Immediate right
(c) Second to right (d) Fourth to left

20. How many persons are seated between A and E?

(a) One (b) Two (c) Three (d) Four

Directions (Q. Nos. 21-25) Read the following information carefully and answer the questions based on it. **[MAT 2012]**

Ten students– A, B, C, D, E, F, G, H, I and J are sitting in a row facing West.

I. B and F are not sitting on either of the edges.
II. G is sitting to the left of D and H is sitting to the right of J.
III. There are four persons between E and A.
IV. I is to the North of B and F is to the South of D.
V. J is in between A and D and G is in between E and F.
VI. There are two persons between H and C.

21. Who is sitting at the seventh place counting from left?

(a) H (b) C
(c) J (d) Either H or C

22. Who among the following is definitely sitting at one of the ends?

(a) C (b) H
(c) E (d) Cannot be determined

23. Who are immediate neighbours of I?

(a) BC (b) BH
(c) AH (d) Cannot be determined

24. Who is sitting second left of D?

(a) G (b) F (c) E (d) J

25. If G and A interchange their positions, then who become the immediate neighbours of E?

(a) G and F (b) Only F
(c) Only A (d) J and H

Directions (Q. Nos. 26-27) Read the following information carefully and then answer the questions that follow.

A group of seven singers, facing the audience, are standing in a line on the stage as follow.

I. D is to the right of C.
II. F is standing beside G.
III. B is to the left of F.
IV. E is to the left of A.
V. C and B have one person between them.
VI. A and D have one person between them.

26. Who is on the extreme right?

(a) D (b) F
(c) G (d) E

27. If we start counting from the left, on which number is C?

(a) 1st (b) 2nd
(c) 3rd (d) 5th

Directions (Q. Nos. 28-30) Read the following information carefully and then answer the questions that follow. **[UCO Bank (Clerk) 2011]**

Eight persons P, M, R, T, Q, U, V and W are sitting in front of one another in two rows. Each row has 4 persons. P is between U and V and facing North. Q, who is to the immediate left of M is facing W. R is between T and M and W is to the immediate right of V.

28. Who is sitting in front of R?

(a) U (b) Q
(c) V (d) P
(e) None of these

29. Who is to the immediate right of R?

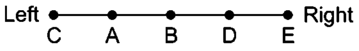
(a) M (b) U
(c) M or T (d) Cannot be determined
(e) None of these

30. In which of the following pairs, persons are sitting in front of each other?

(a) MV (b) RV
(c) TV (d) UR
(e) None of these

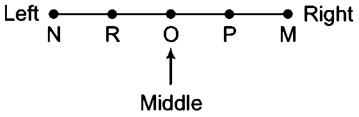
Response & Interpretations

1. (*d*) Arrangement according to the question is as follows


Left
Right
C
A
B
D
E

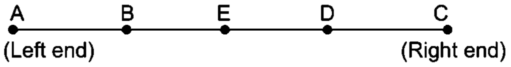
Clearly, C and E are at the extremes.

2. (*a*) Arrangement according to the question is as follows


Left
Right
N
R
O
P
M
Middle

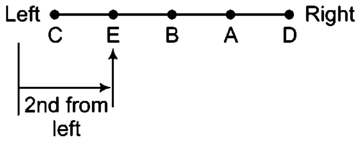
Clearly, O is sitting in the middle.

3. (*d*) The sequence of boys in the row is as follows


A
B
E
D
C
(Left end)
(Right end)

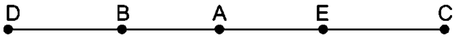
Clearly, E is standing in the middle.

4. (*c*) Arrangement according to the question is as follows


Left
Right
C
E
B
A
D
2nd from left

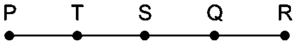
Clearly, E is second from the left end.

5. (*a*) According to the given information, houses in the row are arranged as follows



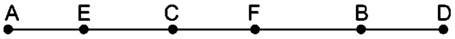
Clearly, the house in the middle is A.

6. (*a*) According to the question, sitting arrangement of all the five friends is as follow



Hence, S is the middle.

7. (*b*) According to the given information, the arrangement in which children are standing in the row is as follows



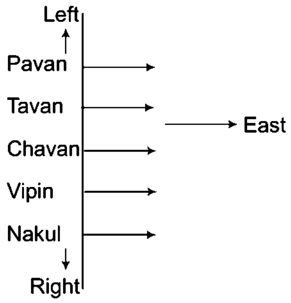
Clearly, F is standing between B and C.

8. (*a*)

S.No. From Top to Bottom	Books
1.	Organisational Behaviour
2.	Industrial Relations
3.	Organisational Behaviour
4.	TQM
5.	Industrial Relations
6.	Industrial Relations
7.	TQM
8.	Economics

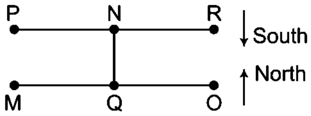
Clearly, the last book from the top is Economics.

9. (*d*) Five boys standing in a row are Pavan, Tavan, Vipin, Chavan and Nakul


Left
Pavan
Tavan
Chavan
Vipin
Nakul
Right
East

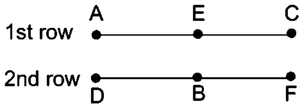
From the given information, the five boys are standing in the row as shown above. Clearly, Tavan is fourth from the right end.

10. (*b*) Arrangement according to the question is as follows


P
N
R
South
North
M
Q
O

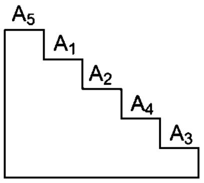
Clearly, Q is sitting opposite to N.

11. (*a*) First row


1st row
A
E
C
2nd row
D
B
F

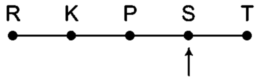
Clearly, D, B and F are in one of the two rows.

12. (*b*) Arrangement according to the question is as follows


A_5
A_1
A_2
A_4
A_3

Clearly, A_3 is at the lowest position.

13. (*d*) According to the question, if we arrange the children in a row, then we get



Hence, P and T are sitting adjacent to S.

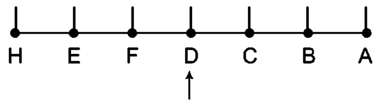
14. (*c*) Sequence of flat is given as,

Mr Muan
Mr Ashokan
Mr Gaurav
Mr Lokesh
Mr Rakesh

So, Mr Muan lives in the topmost flat.

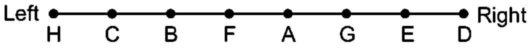
15. (*b*) According to the question,

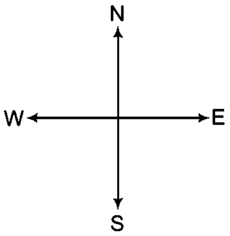
Arranging the seven members in a row,



Hence, D is sitting in the middle.

Solutions (Q. Nos. 16-20) *Arrangement according to the question is as follows*


Left
Right
H
C
B
F
A
G
E
D

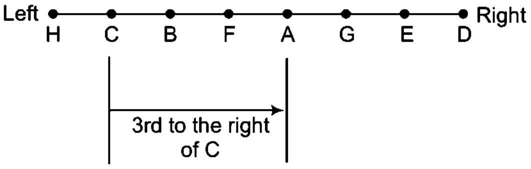


16. (*d*) 5th from left = A

6th from the right = B

Clearly, the person between B and A is F.

17. (*c*)


Left
Right
H
C
B
F
A
G
E
D
3rd to the right of C

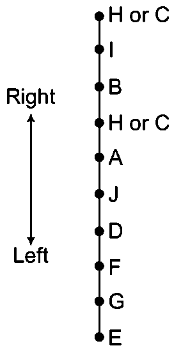
Clearly, A sits third to the right of C.

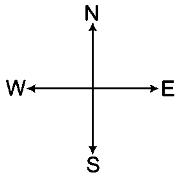
18. (*d*) Clearly,D and H are at the extreme ends.

19. (*a*) Clearly, H is third to the left of F.

20. (*a*) Only one person *i.e.*, G is sitting between A and E.

Solutions (Q. Nos. 21-25) *On the basis of the given information, exact positions of C and H cannot be determined. However, they will occupy the first and the fourth positions. Now, the arrangement is as follows*


Right
Left
H or C
I
B
H or C
A
J
D
F
G
E



21. (*d*) Either H or C will occupy seventh position from the left.

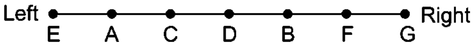
22. (*c*) Clearly, E is definitely sitting at one of the ends.

23. (*d*) The immediate neighbours of I cannot be determined because the position of H and C are not fixed.

24. (*a*) G is sitting to the second left of D.

25. (*c*) A will become the immediate neighbour of E after interchanging position.

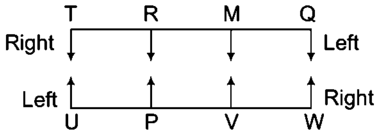
Solutions (Q. Nos. 26-27) *On the basis of given information, the arrangement of the singers in a line is as follows*


Left
Right
E
A
C
D
B
F
G

26. (*c*) Clearly, singer G is on the extreme right of the line.

27. (*c*) C is third from the left.

Solutions (Q. Nos. 28-30) *Arrangement according to the question is as follows*


T
R
M
Q
Right
Left
Left
Right
U
P
V
W

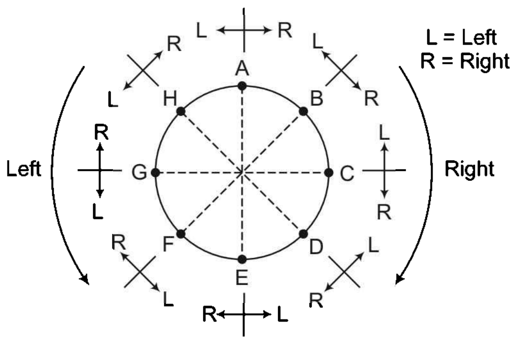
28. (*d*) Clearly, P is sitting in front of R.

29. (*e*) Clearly, T is to the immediate right of R.

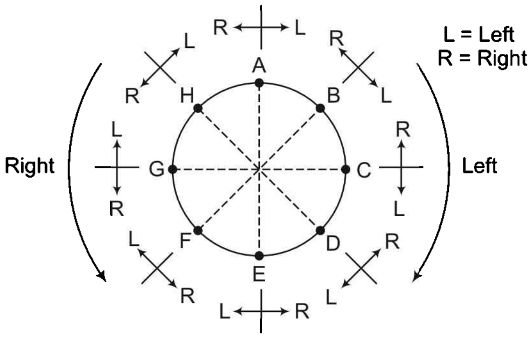
30. (*a*) Clearly, M and V are sitting in front of each other.

Type 2 Circular Arrangement

In this type of arrangement, objects/persons are placed around a circle either facing the centre or facing the direction opposite to centre. The left and right of each person/object in both the cases can be understood with the help of following diagrams.



Facing the direction opposite to centre



Facing the centre

Facing the centre

Here, A and E are in front of each other.
B and F are in front of each other.
C and G are in front of each other.
D and H are in front of each other.

Directions (Example Nos. 5-7) Study the following information carefully and answer the given questions. **[MAT 2009]**

Four ladies A, B, C and D and four gentlemen E, F, G and H are sitting in a circle around a table facing each other.

I. No two ladies or two gentlemen are sitting side-by-side.
II. C, who is sitting between G and E, is facing D.
III. F is between D and A and is facing G.
IV. H is to the right of B.

***Ex* 5** Who is sitting to the left of A?

(a) E (b) F (c) G (d) H

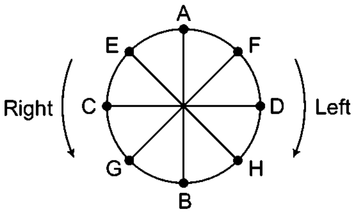
***Ex* 6** E is facing whom?

(a) F (b) B (c) G (d) H

***Ex* 7** Who are immediate neighbours of B?

(a) G and H (b) E and F (c) E and H (d) F and H

Solutions (Example Nos. 5-7) *On the basis of given information, the sitting arrangement of the persons will be as follows*



5. (*b*) Clearly, F is sitting to the left of A.

6. (*d*) Clearly, E is facing H.

7. (*a*) G and H are immediate neighbours of B.

Practice Corner **15.2**

Build your Confidence...

1. Five persons are sitting facing centre of a circle. Pramod is sitting to the right of Ranjan. Raju is sitting between Brejesh and Naveen. Raju is to the left of Brejesh and Ranjan is to right of Brejesh. Who is sitting to the left of Naveen?

(a) Pramod (b) Raju (c) Brejesh (d) Rajan

2. Six persons are sitting in a circle facing the centre of the circle. Parikh is between Babita and Narendra. Asha is between Chitra and Pankaj. Chitra is to the immediate left of Babita. Who is to the immediate right of Babita?

(a) Parikh (b) Pankaj (c) Narendra (d) Chitra

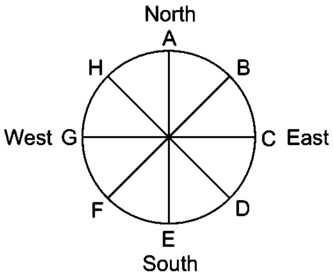
3. Four girls A, B, C and D are sitting around a circle facing the centre. B and C are in front of each other, which of the following is definitely true? **[MAT 2009]**

(a) A and D are in front of each other
(b) A is not between B and C
(c) D is to the left of C
(d) A is to the left of C

4. Six persons are sitting around a circular table. Ajay is facing Hemant who is sitting to the left of Arvind and right of Sanjay. Suman is to the right of Arvind. Manoj is facing Arvind. If Hemant and Manoj, Arvind and Sanjay mutually exchange their positions, who is now sitting to the right of Manoj?

(a) Arvind (b) Ajay
(c) Suman (d) None of these

5. Eight persons A, B, C, D, E, F, G and H are sitting around the circle as given in the figure. They are facing the direction opposite to centre. If they move upto three places anti-clockwise, then **[MAT 2011]**



(a) B will face West
(b) E will face East
(c) H will face North-West
(d) A will face South

6. Five people A, B, C, D and E are seated about a round table. Every chair is spaced equidistant from adjacent chairs. **[UPSC (CSAT) 2013]**

I. C is seated next to A.
II. A is seated two seats from D.
III. B is not seated next to A.

Which of the following must be true?

I. D is seated next to B.
II. E is seated next to A.

Select the correct answer from the codes given below.

(a) Only I (b) Only II
(c) Both I and II (d) Neither I nor II

Directions (Q. Nos. 7-11) Study the following information to answer the given questions. **[GIC 2012]**

Eight friends, A, B, C, D, E, F, G and H are sitting in a circle facing the centre, not necessarily in the same order. D sits third to the left of A. E sits to the immediate right of A. B is third to the left of D. G is second to the right of B. C is an immediate neighbour of B. C is third to the left of H.

7. Who amongst the following is sitting exactly between F and D?

(a) C (b) E
(c) H (d) A

8. Three of the following four are alike in a certain way based on the information given above and so form a group. Which is the one that does not belong to that group?

(a) DC (b) AH
(c) EF (d) CB

9. Who amongst the following is sitting second to the left of H?

(a) E (b) B
(c) A (d) None of these

10. Who amongst the following are immediate neighbours of G?

(a) CA (b) AF
(c) DC (d) DF

11. Who amongst the following is sitting third to the right of A?

(a) F
(b) H
(c) B
(d) C

Directions (Q. Nos 12-13) Read the following information carefully, and answer the questions that follow **[NIFT (UG) 2013]**

Eight friends A, B, C, D, E, F,G and H are sitting in a circle facing the center. B is sitting between G and D. H is third to the left of B and second to the right of A. C is sitting between A and G and B and E are not sitting opposite to each other.

12. Who is third to the left of D?

(a) F (b) E
(c) A (d) Cannot be determined

13. Which of the following statements is not correct?

(a) D and A are sitting opposite to each other
(b) C is third to the right of D
(c) E is sitting between F and D
(d) A is sitting between C and F

Directions (Q. Nos. 14 -16) Study the following information carefully to answer the given questions

I. Eight friends A, B, C, D, E, F, G and H are seated in a circle facing the centre.
II. D is between B and G and F is between A and H.
III. E is second to the right of A.

14. Which of the following is A's position?

(a) Left of F (b) Right of F
(c) Between E and F (d) Cannot be determined

15. Which of the following information is not required to ascertain the position of C?

(a) I (b) Either II or III
(c) III (d) All required

16. Which of the following is C's position?

(a) Between E and F (b) Between G and E
(c) Second to the left of B (d) None of these

Directions (Q. Nos. 17-18) Read the following information carefully to answer the given questions. **[UCO Bank (PO) 2011]**

A, B, C, D, E and F are standing in a circular space facing the centre. A and C are together and also E and B are together. B is standing to the left of F. There are two persons between D and E. A and E are not together.

17. If we move anti-clockwise from F to E, then how many persons are there between F and E?

(a) 1 (b) 2
(c) 3 (d) Data inadequate
(e) None of these

18. Who is sitting immediate left of E?

(a) C (b) B
(c) F (d) Data inadequate
(e) None of these

Directions (Q. Nos. 19-21) In each question given below, four options out of five are somehow same and therefore they form a group. Find the option which is not member of this group

19. (a) BA (b) BD (c) CF (d) DE
(e) FC

20. (a) BEC (b) CAD (c) FDA (d) DFB
(e) ADF

21. (a) AC (b) EB (c) CE (d) AF
(e) DA

Directions (Q. Nos. 22-24) Read the following information carefully to answer the questions that follow. **[CMAT 2014]**

Six girls are sitting in a circle. Sonia is sitting opposite to Radhika. Poonam is sitting right of Radhika but left of Deepti. Monika is sitting left of Radhika. Kamini is sitting right of Sonia and left of Monika. Now, Deepti and Kamini, Monika and Radhika mutually exchange their positions.

22. Who will be opposite to Sonia?

(a) Radhika (b) Monika
(c) Kamini (d) Sonia

23. Who will be sitting left of Kamini?

(a) Poonam (b) Deepti
(c) Radhika (d) Sonia

24. Who will be sitting left of Deepti?

(a) Sonia (b) Monika
(c) Radhika (d) Poonam

Directions (Q. Nos. 25-28) Read the following information carefully to answer the questions that follow.

Six persons are sitting in a circle. A is facing B. B is to the right of E and left of C. C is to the left of D. F is to the right of A. Now, D exchanges his seat with F and E with B.

25. Who will be sitting to the left of D?

(a) B (b) D
(c) E (d) A

26. Who will be sitting to the left of C?

(a) E (b) F
(c) A (d) B

27. Who will be sitting opposite of A?

(a) E (b) F
(c) D (d) B

28. Who will be sitting opposite to C?

(a) C (b) D
(c) B (d) A

Directions (Q. Nos. 29-34) Study the following information carefully to answer the questions given below.

I. L, M, N, P, Q, R and S are sitting in a circle and playing cards.
II. N, who is the neighbour of P, is not the neighbour of R.
III. Q is the second to the left of R.
IV. N is second to the left of S, who is the neighbour of M.

29. Which of the following is true?
(a) Q is the neighbour of S and L
(b) M is the neighbour of S and L
(c) R is the neighbour of P and M
(d) L is the neighbour of P and Q

30. Which of the following pairs has the second person sitting second to the right of the first person?
(a) RM (b) NQ
(c) QS (d) None of these

31. Which of the following pairs has the first person sitting third to the left of the second person?
(a) RN (b) SL (c) SR (d) NL

32. Who is to the immediate right of S?
(a) M (b) R (c) Q (d) L

33. What is the position of L?
(a) To the immediate right of R
(b) Second to the left of M
(c) To the immediate right of Q
(d) Between M and R

34. Which of the following is not true?
(a) R is to the immediate left of L
(b) P is to the immediate right of R
(c) N is to the immediate right of P
(d) L is to the immediate left of R

Directions (Q. Nos. 35-39) Study the following information carefully to answer the given questions. **[Uttrakhand (GBO) 2012]**

Eight friends A, B, C, D, E, F, G and H are sitting around a circle facing the centre but not necessarily in the same order. G sits third to left of D. Only one person sits between D and F. B sits second to right of H. H is not an immediate neighbour of D. C is not an immediate neighbour of D. E is an immediate neighbour of H.

35. What is the position of E with respect to the position of C?
(a) Third to the left (b) Second to the left
(c) Immediate right (d) Third to the right
(e) Second to the right

36. Who amongst the following sits exactly between A and G?
(a) B (b) C (c) E (d) F
(e) D

37. Four of the following five are alike in a certain way and thus form a group. Which is the one that does not belong to that group?
(a) CG (b) AE (c) HD (d) EC
(e) None of these

38. Which of the following is true with respect to given seating arrangement?
(a) Both A and D are immediate neighbours of E
(b) C sits exactly between H and F
(c) Only three people sit between C and E
(d) H is to the immediate left of B
(e) None of the above

39. Who amongst the following sits third to the left of F?
(a) A (b) B
(c) C (d) G
(e) H

Directions (Q. Nos. 40-44) Study the following information carefully to answer the questions given below. **[IBPS (Clerk) 2011]**

P, T, V, R, M, D, K and W are sitting around a circular table facing the centre. V is second to the left of T. T is fourth to the right of M. D and P are not immediate neighbours of T. D is third to the right of P. W is not an immediate neighbour of P. P is to the immediate left of K.

40. Who is second to the left of K?
(a) P (b) R (c) M (d) W
(e) Data inadequate

41. Who is to the immediate left of V?
(a) D (b) M
(c) W (d) Data inadequate
(e) None of these

42. Who is the third to the right of V?
(a) T (b) K
(c) P (d) M
(e) None of these

43. What is R's position with respect to V?
(a) Third to the right (b) Fifth to the right
(c) Third to the left (d) Second to the left
(e) Fourth to the left

44. Four of the following five are alike in a certain way based on their positions in the above sitting arrangement and so form a group. Which of the following does not belong to that group?
(a) DW
(b) TP
(c) VM
(d) RD
(e) KR

Directions (Q. Nos. 45-47) Study the following information carefully to answer the questions that follow. **[MAT 2011]**

Six couples have been invited to a dinner party. They are Niti, Geeta, Lata, Rakhi, Sita, Champa and Farookh, Hari, Amit, Tilak, Ram, Ali. They are seated on a circular table, facing each other.

I. Geeta refuses to sit next to Ali.
II. Lata wants to be between Amit and Hari.
III. Champa refuses to sit next to Farookh.
IV. Niti is seated on Ali's right hand side.
V. Farookh and Tilak are seated exactly opposite to each other.
VI. Ram and Sita are seated to the left of Champa.
VII. Amit and Rakhi want to enjoy the company of Lata and Tilak respectively and are seated closest to them.
VIII. The seating arrangement is such that minimum one woman is always between two men.

45. Which of the following statements is correct?
(a) Lata is on Tilak's right
(b) Ali is on Champa's right
(c) Geeta is on Hari's right
(d) Geeta is on Farookh's left

46. If looked in an anti-clockwise manner, who are seated between Tilak and Farookh?
(a) Sita, Ram, Champa, Ali and Niti
(b) Sita, Ram, Rakhi, Amit and Lata
(c) Sita, Ram, Geeta, Hari and Lata
(d) Sita, Ram, Lata, Amit and Hari

47. Which of the following close neighbouring arrangements is correct?
(a) Ali, Champa and Ram
(b) Tilak, Ram and Ali
(c) Niti, Farookh and Lata
(d) Hari, Geeta and Amit

Directions (Q. Nos. 48-52) Read the following information carefully to answer the given questions. **[Syndicate Bank (PO) 2010]**

V, U and T are sitting around a circle. A, B and C are sitting around the same circle but two of them are not facing centre (they are facing the direction opposite to centre). V is second to the left of C. U is second to the right of A. B is third to the left of T. C is second to the right of T. A and C are not sitting together.

48. Which of the following is not facing centre?
(a) BA
(b) CA
(c) BC
(d) Cannot be determined
(e) None of these

49. Which of the following is the position of T in respect of B?
(a) Third to the right
(b) Second to the right
(c) Third to the left
(d) Third to the left or right
(e) None of the above

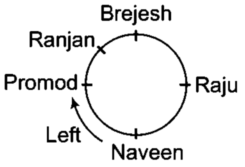
50. What is the position of V in respect of C?
(a) Second to the right
(b) Third to the left
(c) Fourth to the right
(d) Fourth to the left
(e) Cannot be determined

51. Which of the following statement is correct?
(a) A, B and C are sitting together
(b) V, U and T are sitting together
(c) Sitting arrangement of two persons cannot be determined
(d) Those who are not facing centre are sitting together
(e) Only two people are sitting between V and T

52. What is the position of A in respect of U?
(a) Second to the left
(b) Second to the right
(c) Third to the right
(d) Cannot be determined
(e) None of these

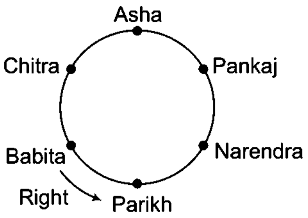
Response & Interpretations

1. (*a*) Following sitting arrangement is formed from the given information



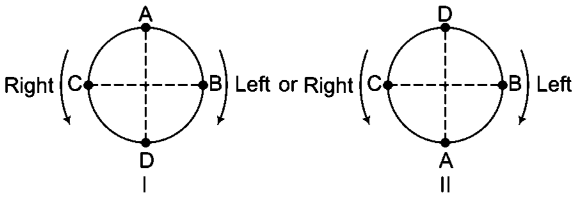
Clearly, Pramod is to the left of Naveen.

2. (*a*) Following sitting arrangement is formed from the given information



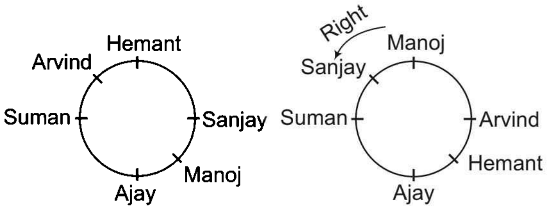
Clearly, Parikh is to the immediate right of Babita.

3. (*a*) There are two possible arrangements of the four girls around the circle, as follows


A
Right
C
B
D
I
Left or Right
D
C
B
A
II
Left

Clearly, A and D are in front of each other in both the arrangements.

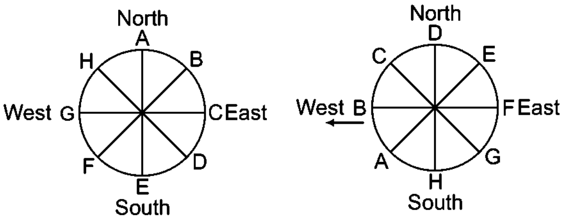
4. (*d*) Following sitting arrangement is formed from the given information,


Hemant
Arvind
Suman
Sanjay
Manoj
Ajay
Right
Manoj
Sanjay
Suman
Arvind
Hemant
Ajay

Original Arrangement **New Arrangement**

Clearly, Sanjay is sitting to the right of Manoj.

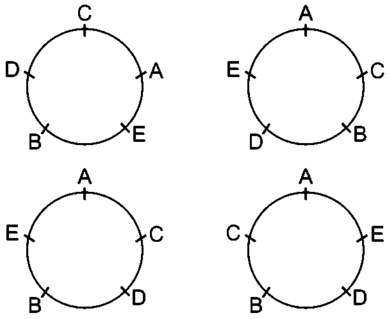
5. (*a*) Following sitting arrangement is formed from the given information.


North
A
H
B
West G
C East
F
D
E
South
North
D
C
E
West B
F East
A
G
H
South

Original position **New position**

Clearly, B will face West.

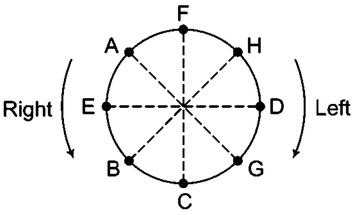
6. (*c*) According to the given information, there are four possible sitting arrangements as follows.


C
D
A
B
E
A
E
C
D
B
A
E
C
B
D
A
C
E
B
D

From the above arrangements, it is clear that D is seated next to B. Also, E is seated next to A.

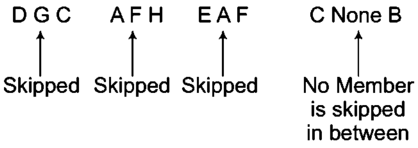
Clearly, both the Statements I and II are true.

Solutions (Q. Nos. 7-11) *Arrangement according to the question is as follows*


F
A
H
Right
E
D
Left
B
G
C

7. (*c*) Clearly, H is sitting exactly between F and D.

8. (*d*)


D G C
A F H
E A F
C None B
Skipped
Skipped
Skipped
No Member is skipped in between

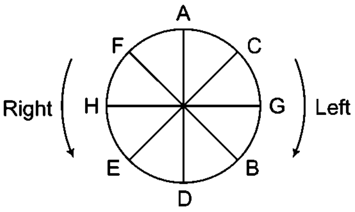
So, CB does not belong to the group.

9. (*d*) Clearly, G is sitting second to the left of H.

10. (*c*) Clearly, D and C are immediate neighbours of G.

11. (*d*) Clearly, C is sitting third to the right of A.

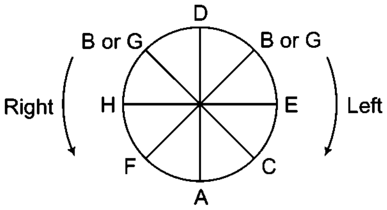
Solutions (Q. Nos. 12-13) *On the basis of given information, the correct position of persons sitting around the circular table is as follows*


A
F
C
Right
H
G
Left
E
B
D

12. (*a*) Clearly, F is third to the left of D.

13. (*c*) E is sitting between H and D. Hence, statement (c) is not correct.

Solutions (Q. Nos. 14-16) *On the basis of the given information, the sitting arrangement of the persons is as follows*

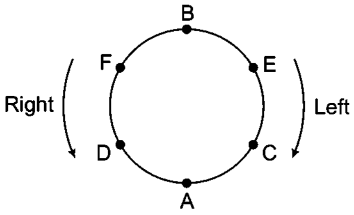

D
B or G
B or G
Right
H
E
Left
F
C
A

14. (*b*) Clearly, A is sitting to the right of F.

15. (*d*) Each piece of the given information is required to ascertain the position of C.

16. (*d*) C is sitting between A and E.

Solutions (Q. Nos. 17-21) *Arrangement according to the question is as follows*



17. (*c*) Clearly, D, A and C *i.e.,* 3 persons are between F and E in anti-clockwise direction.

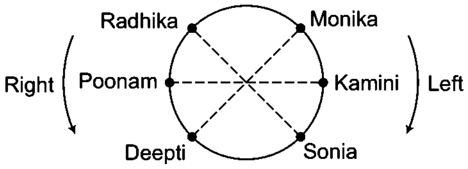
18. (*a*) Clearly, C is sitting to the immediate left of E.

19. (*b*) Except BD, all other group members are opposite to one another.

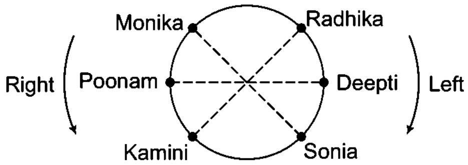
20. (*c*) Except FDA, all the other group members are present in clockwise direction with respect to each other in the given arrangement.

21. (*d*) Except AF, all the other group members are sitting as immediate neighbours of one another.

Solutions (Q. Nos. 22-24) *Arrangements according to the question are as follows*



Original positions



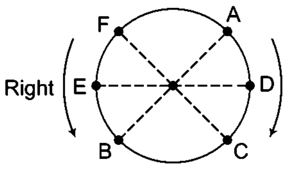
New arrangement

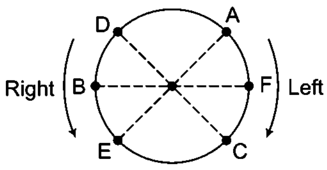
22. (*b*) Clearly, Monika will be opposite to Sonia.

23. (*a*) Clearly, Poonam will be sitting left of Kamini.

24. (*a*) Clearly, Sonia will be sitting left of Deepti.

Solutions (Q. Nos. 25-28) *Arrangements according to the question, are as follows*





Original Position **New arrangement**

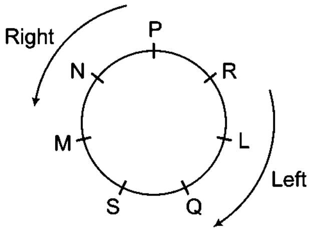
25. (*d*) Clearly, A is sitting to the left of D.

26. (*a*) Clearly, E is sitting to the left of C.

27. (*a*) Clearly, E is sitting opposite to A.

28. (*b*) Clearly, D is sitting opposite to C.

Solutions (Q. Nos. 29-34) *The sitting arrangement of the seven persons is as follows*



29. (*a*) Clearly, Q is the neighbour of S and L.

30. (*d*) None of the pair satisfies the given condition.

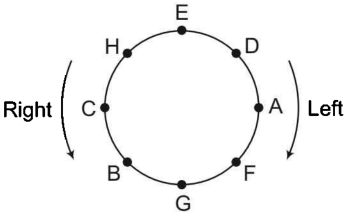
31. (*c*) Clearly, S is sitting third to the left of R.

32. (*c*) Clearly, Q is to immediate right of S.

33. (*c*) Clearly, L is to the immediate right of Q.

34. (*a*) Clearly, R is to the immediate right of L. So, option (a) is not correct.

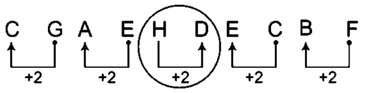
Solutions (Q. Nos. 35-39) *Arrangement according to the question is as follows*



35. (*b*) Clearly, E is second to the left of C.

36. (*d*) Clearly, F sits between A and G.

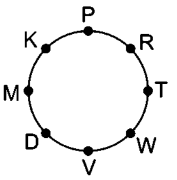
37. (*c*) Except HD, in all other pairs, first member is present on the clockwise side of other.



38. (*e*) It is clear from the figure that none of the options (a)-(d) is true.

39. (*c*) Clearly, C is third to the left of F.

Solutions (Q. Nos. 40-44) *Following sitting arrangement is formed from the given information.*



40. (*b*) Clearly, R is second to the left of K.

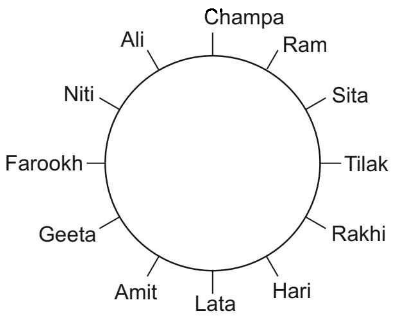
41. (*a*) Clearly, D is to the immediate left of V.

42. (*e*) Clearly, R is third to the right of V. So, none of the given options is correct.

43. (*a*) Clearly, R is the third to the right of V.

44. (*d*) In all the others, there is only one individual between the two. But, R and D are opposite to each other.

Solutions (Q. Nos. 45-47) *Following sitting arrangement is formed from the given information*

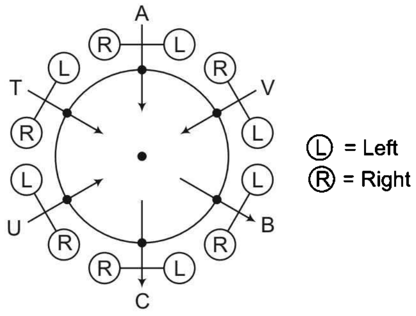


45. (*b*) Clearly, Ali is on Champa's right. So, statement (b) is correct.

46. (*a*) If looked in an anti-clockwise manner, Sita, Ram, Champa, Ali and Niti are seated between Tilak and Farookh.

47. (*a*) Clearly, Ali, Champa and Ram are close neighbours.

Solutions (Q. Nos. 48-52) *Arrangement according to the questions is as follows*



48. (*c*) B and C are not facing centre.

49. (*d*) T is sitting third to the left or right of B.

50. (*c*) V is fourth to the right of C.

51. (*d*) The persons who are not facing centre *i.e.*, B and C are sitting together.

52. (*a*) Clearly, A is second to the left of U.

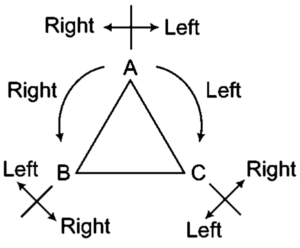
Type 3 Polygonal Arrangement

A polygon is a closed figure formed with three or more sides. So, in this type of questions, the arrangement of objects/persons may be done along triangular, quadrilateral, pentagonal shape etc.

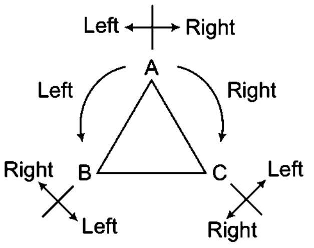
The major arrangements are discussed as follows

A. Triangular Arrangement

In this type of arrangement, the objects/persons are placed around a triangular plane that may be a table or any triangular object. A triangle has 3 corners and three sides, so three persons can sit at these corners and they may be facing either the centre or the direction opposite to the centre. The left and right of each person/object in both the cases can be understood with the help of following diagrams.



Facing the centre

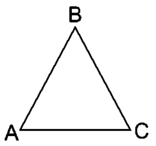


Facing the direction opposite to the centre

***Ex* 8** 3 persons A, B and C are sitting along the corners of a triangular table. A is to right of B. Who is sitting to right of C?

(a) A (b) B (c) C (d) None of these

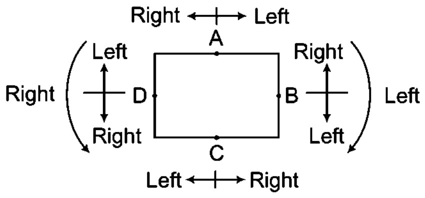
Sol. (*b*) Arrangement according to the question is as follows



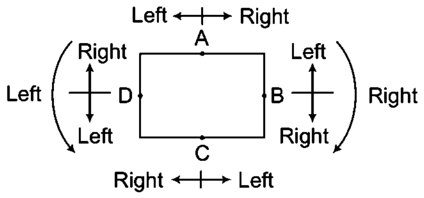
Clearly, B is sitting to the right of C.

B. Quadrilateral Arrangement

In this type of arrangement, four objects/persons are placed around a rectangular or a square shaped table or a park facing either the centre or the direction opposite to centre. The left and right of each person in both the cases can be understood with the help of following diagrams.


Right
Left
A
Left
Right
Right
D
B
Left
Right
Left
C
Left
Right

Facing the centre

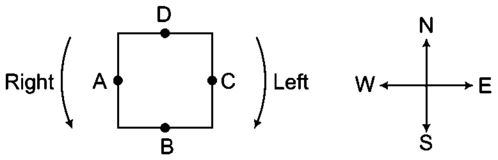

Left
Right
A
Right
Left
Left
D
B
Right
Left
Right
C
Right
Left

Facing the direction opposite to centre

Ex **9** A, B, C and D are playing cards. A and C and B and D are partners. D is to the right of C. The face of C is towards West. Find the direction that D is facing.

(a) West (b) East (c) South (d) North

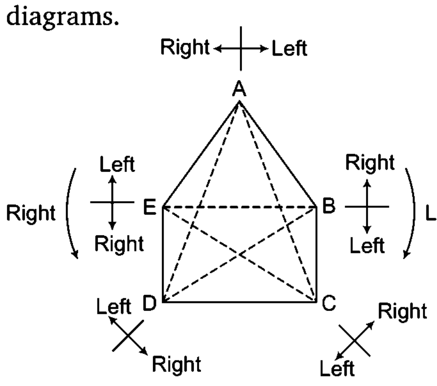
Sol. (c) Arrangement according to the question is as follows


D
Right
A
C
Left
B
N
W
E
S

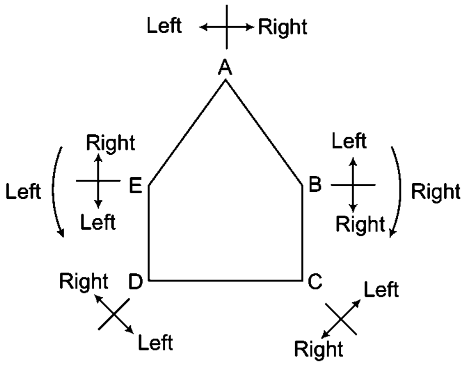
Clearly, D is facing South.

C. Pentagonal Arrangement

In this arrangement, five persons/objects are placed around a pentagonal plane facing either the centre or the direction opposite to the centre. The left and right of each person in both the cases can be understood with the help of the following diagrams.


Right
Left
A
Left
Right
Right
E
B
Left
Right
Left
Left
D
C
Right
Right
Left

Facing the centre

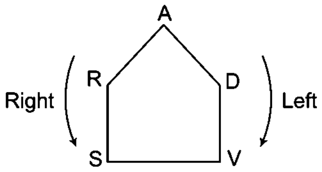

Left
Right
A
Right
Left
Left
E
B
Right
Left
Right
Right
D
C
Left
Left
Right

Facing the direction opposite to centre

Ex **10** 5 girls A, R, D, S and V are sitting around a pentagonal table. A is between R and D. S is to the left of V. R is to the left of S. Who is to the right of A?

(a) S (b) D (c) R (d) V

Sol. (c) Arrangement according to the question is as follows

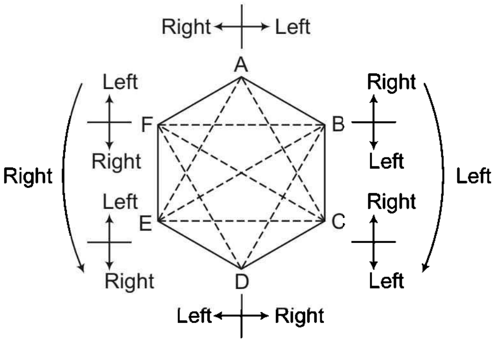

A
Right
R
D
Left
S
V

Clearly, R is to the right of A.

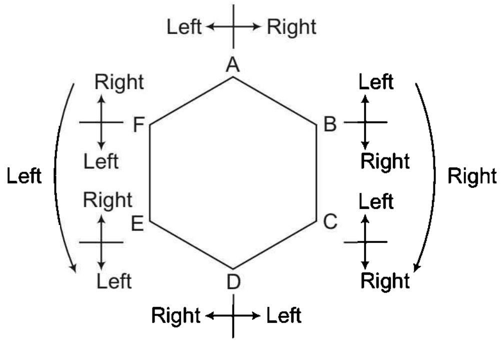
D. Hexagonal Arrangement

In this arrangement, six objects/persons are placed around a hexagonal plane facing either the centre or the direction opposite to centre.

The left and right of each person/object in both the cases can be understood with the help of following diagrams.


Right Left
A
Left
F
Right
Left
E
Right
Right
B
Left
Right
C
Left
D
Left Right
Right
Left

Facing the centre

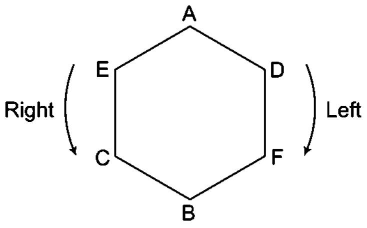

Left Right
A
Right
F
Left
Right
E
Left
Left
B
Right
Left
C
Right
D
Right Left
Left
Right

Facing the direction opposite to centre

Ex **11** 6 persons are sitting along a hexagonal dining table to have dinner. B is between F and C. A is between E and D and F is to the left of D. Who is between A and F?

(a) E (b) D (c) C (d) B

Sol. (*b*) Arrangement according to the question is as follows

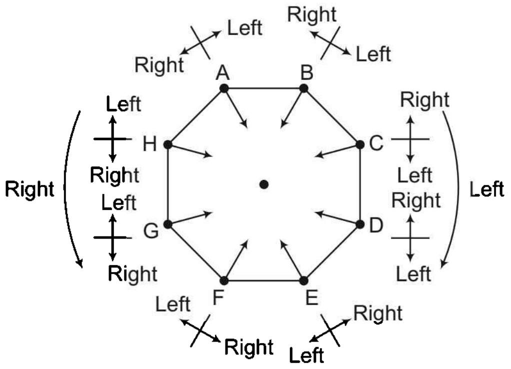

A
E
D
Right
Left
C
F
B

Clearly, D is between A and F.

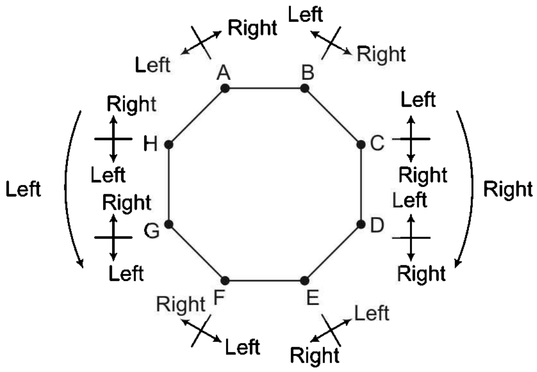
E. Octagonal Arrangement

In this arrangement, eight objects/persons are placed around a octagonal plane facing either the centre or the direction opposite to centre.

The left and right of each person/object in both the cases can be understood with the help of following diagrams.


Left
Right
Right
Left
A
B
Left
H
Right
Left
G
Right
Right
C
Left
Right
D
Left
Right
Left
F
E
Left
Right
Right
Left

Facing the centre

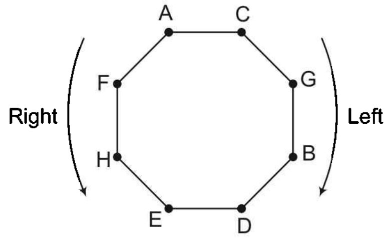

Right
Left
Left
Right
A
B
Right
H
Left
Right
G
Left
Left
C
Right
Left
D
Right
Left
Right
F
E
Right
Left
Left
Right

Facing the direction opposite to centre

***Ex* 12** 8 persons A, B, C, D, E, F, G and H are sitting around an octagonal dining table facing the centre. B is between G and D. H is third to the left of B and second to the right of A. C is between A and G. B and E are not in front of each other. Who is third to the left of D?

(a) H (b) G (c) F (d) E

Sol. (c) Arrangement according to the question is as follows



Clearly, F is third to the left of D.

Practice Corner **15.3**

Build your Confidence...

1. Radha, Sheela, Mahima and Seeta are sitting along a rectangular table. Radha is to the right of Sheela. Mahima is to the left of Seeta. Which of the persons given in the options are sitting opposite to each other?

(a) Sheela-Seeta
(b) Radha-Seeta
(c) Radha-Sheela
(d) Mahima-Radha

2. Four boys and four girls are sitting around a square facing the centre. One person is sitting at each corner and at the mid-point of each side of the square. Madhu is sitting diagonally opposite to Usha who is to the right of Geeta. Ram who is to the left of Geeta is diagonally opposite to Gopi who is to the left of Bose. Position of Suma is not to the right of Madhu but in front of Prema. Who is sitting opposite to Bose? **[MAT 2009]**

(a) Geeta
(b) Prema
(c) Suma
(d) Madhu

3. Three friends Ravi, Deepak and Mohit are sitting along the corners of a triangular field facing the centre. Ravi is to the left of Mohit. Who is sitting to right of Mohit?

(a) Ravi (b) Deepak
(c) Mohit (d) None of these

4. Five children A, B, C, D and E are sitting along the corners of a pentagonal table facing the centre. B is between E and C. D is to the right of E. Who is to the left of C?

(a) B (b) A
(c) D (d) C

5. Some friends are sitting at an octagonal place. Each person is sitting at one corner facing the centre. Mahima is sitting slantly in front of Ram. Ram is to the right of Sushma. Ravi is sitting beside Sushma and in front of Giridhar. Giridhar is to the left of Chandra. Savitri is not to the right of Mahima but is in front of Shalini. Who is sitting to the right of Shalini? **[SSC (CPO) 2010]**

(a) Ravi (b) Mahima (c) Giridhar (d) Ram

Directions (Q. Nos. 6-12) Read the following information carefully to answer the given questions. **[Andhra Bank (PO) 2010]**

Eights friends P, Q, R, S, T, V, W and Y are sitting around a square table. Out of eight, four persons are sitting at the corners of the table and the other four are sitting at the mid-points of each side of the table. Persons at the corners are facing the centre while the persons at the mid-points of side are facing outside. S is third to the right of P.

P is facing the centre. Y is not sitting beside P or S. T is third to the right of R. R is not sitting at the mid-point of any side of the table. R is also not beside Y. There is only one person between P and V. Q is not sitting beside V.

6. If all the persons are made to sit in alphabetical order in clockwise direction starting from P, then the position of how many persons remains the same (excluding P)?

(a) None (b) One (c) Two (d) Three
(e) Four

7. Which of the following is true regarding Y?

(a) T is not sitting beside Y
(b) Y is sitting at the mid-point of a side
(c) R is second to the left of Y
(d) P and V are beside Y
(e) None of the above

8. Who is 4th to the left of V?
(a) Y
(b) R
(c) T
(d) Q
(e) W

9. What is the position of Q in respect of R?
(a) Immediate left
(b) Second to the left
(c) Third to the left
(d) Third to the right
(e) Immediate right

10. Four out of following five are some how same and therefore they form a group. Which one of the following does not come into this group?
(a) Y
(b) W
(c) V
(d) R
(e) P

11. Who is third to the right of W?
(a) R
(b) S
(c) Q
(d) Y
(e) Cannot be determined

12. How many people are there between T and Q?
(a) None
(b) 1
(c) 2
(d) 3
(e) 4

Directions (Q. Nos. 13-17) Read the following information carefully to answer the given questions

Six people A, B, C, D, E and F are sitting on the ground in a hexagonal shape. All the sides of the hexagon, so formed are of same length. A is not adjacent to B or C. D is not adjacent to C or E. B and C are adjacent. F is in the middle of D and C.

13. Which of the following is not a correct neighbour pair?
(a) A and F
(b) D and F
(c) B and E
(d) C and F

14. Who is at the same distance from D as E is from D?
(a) B
(b) C
(c) D
(d) F

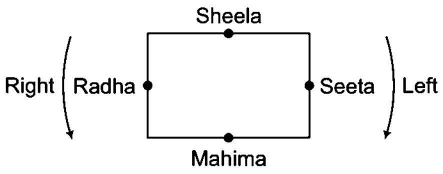
15. Which of the following group has the correct order of arrangement?
(a) A, F, B
(b) F, A, E
(c) B, C, F
(d) D, A, B

16. If one neighbour of A is D, who is the other one?
(a) B
(b) C
(c) E
(d) F

17. Who is placed opposite to E?
(a) B
(b) C
(c) D
(d) F

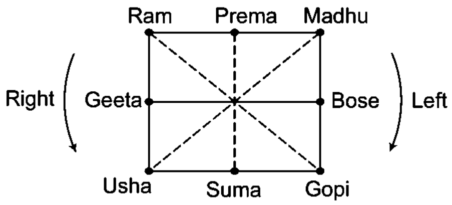
Response & Interpretations

1. (*b*) Arrangement according to the question is as follows



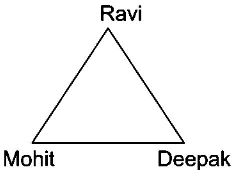
Clearly, Radha and Seeta are sitting opposite to each other.

2. (*a*) Arrangement according to the question is as follows



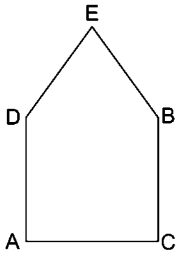
Clearly, Geeta is sitting opposite to Bose.

3. (*b*) Following sitting arrangement is formed from the given information.



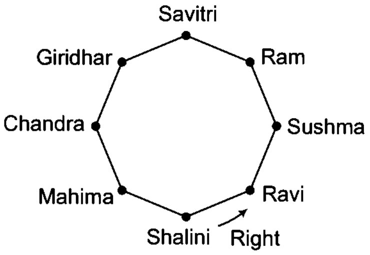
Clearly, Deepak is sitting to right of Mohit.

4. (*b*) Following sitting arrangement is formed from the given information.



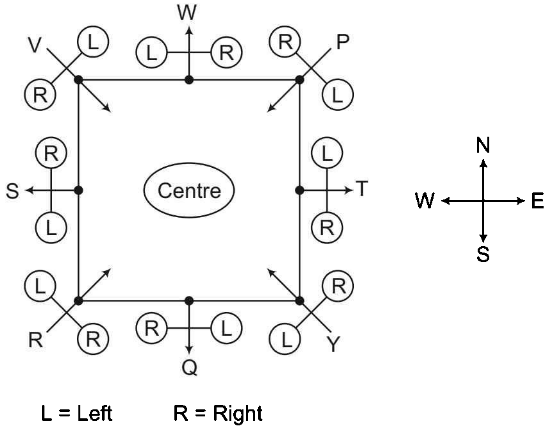
Clearly, A is to the left of C.

5. (*a*) Arrangement according to the question is as follows

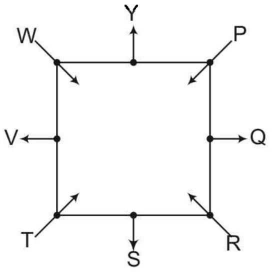

Savitri
Giridhar
Ram
Chandra
Sushma
Mahima
Ravi
Shalini
Right

Clearly, Ravi is to the right of Shalini.

Solutions (Q. Nos. 6-12) *On the basis of given information,*


W
V
P
S
T
R
Y
Q
Centre
L
R
N
E
L = Left
R = Right

6. (*a*) According to the question, following new arrangement is obtained.



Clearly, none of the persons except *P* remains at the same position.

7. (*c*) Clearly, R is second to the left of Y.

8. (*a*) Clearly, Y is fourth to the left of V.

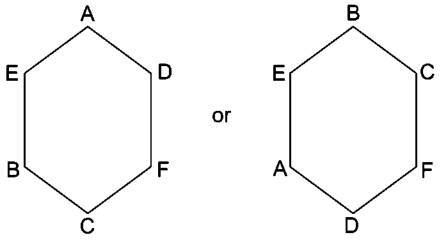
9. (*e*) Clearly, Q is to the immediate right of R.

10. (*b*) Except W, all are facing inside.

11. (*d*) Clearly, Y is third to the right of W.

12. (*b*) Only one person Y is sitting between T and Q.

Solutions (Q. Nos. 13-17) *According to the given information, there are two possible arrangements as follows.*


A
E
D
B
F
C
or
B
E
C
A
F
D

13. (*a*) A and F are not neighbours.

14. (*b*) Both E and C are two places apart from D.

15. (*c*) B, C and F are given in correct order.

16. (*c*) The other neighbour of A is E.

17. (*d*) F is placed opposite to E.

Master Exercise

Take a Leap...

1. There are six houses in a row. Mr Lal has Mr Bhasin and Mr Sachdeva as neighbours. Mr Bhatia has Mr Gupta and Mr Sharma as neighbours. Mr Gupta's house is not next to Mr Bhasin or Mr Sachedava and Mr Sharma does not live next to Mr Sachedeva. Who are Mr Bhasin's next door neighbours?

(a) Mr Lal and Mr Bhasin (b) Mr Lal and Mr Sachdeva
(c) Mr Sharma and Mr Lal (d) Only Mr Lal

2. Six friends A, B, C, D, E and F are sitting in a row facing towards North. C is sitting between A and E, D is not at the end, B is sitting at immediate right of E, F is not at the right end, but D is sitting at 3rd left of E. Which of the following is sitting to the left of D? **[SSC (CPO) 2013]**

(a) A (b) F (b) E (d) C

3. Five girls are sitting in a row. Kalpita is to the left of Mridula. Megha is to the right of Arpana. Sangeeta is in the middle of Megha and Kalpita. Who among the following is to the extreme right of the row?

(a) Mridula (b) Arpana
(c) Kalpita (d) Cannot be determined

4. There are five books A, B, C, D and E. Book C lies above D. Book E is below A, D is above A and B is below E. Which book is at the bottom? **[MAT 2013]**

(a) E (b) B (c) A (d) C

5. Six friends A, B, C, D, E and F are sitting in a row facing East. 'C' is between 'A' and 'E'. 'B' is just to the right of 'E' but left of 'D'. 'F' is not at the right end. How many persons are to the right of 'E'? **[SSC (10+2) 2011]**

(a) 1 (b) 2 (c) 3 (d) 4

6. Seven children A, B, C, D, E, F and G are standing in a row. G is to the right of D and to the left of B. A is on the right of C, A and D have one child between them. E and B have two children between them. D and F have also two children between them. Who is exactly in the middle? **[UP PSC 2013]**

(a) A (b) C
(c) D (d) G

7. Six persons are playing a card game. Suresh is facing Raghubir who is to the left of Ajay and to the right of Pramod. Ajay is to the left of Dhiraj. Yogendra is to the left of Pramod. If Dhiraj exchanges his seat with Yogendra and Pramod exchanges with Raghubir, who will be sitting to the left of Dhiraj? **[MAT 2012]**

(a) Yogendra (b) Raghubir
(c) Suresh (d) Ajay

Directions (Q. Nos. 8-9) Read the following information carefully and then answer the questions given below.

Seven boys A, B, C, D, E, F and G are standing in a line.

I. G is between A and E.
II. F and A have one boy between them.
III. E and C have two boys between them.
IV. D is to the immediate right of F.
V. C and B have three boys between them.

8. Who is second from left?

(a) C (b) G
(c) E (d) A

9. C is standing between

(a) A and F (b) D and G
(c) A and D (d) F and G

Directions (Q. Nos. 10-13) Read the following information carefully and then answer the questions given below it. **[CMAT 2014]**

Five friends A, B, C, D and E are sitting on a bench.

I. A is sitting next to B.
II. C is sitting next to D.
III. D is not sitting with E.
IV. E is on the left end of the bench,
V. C is on second position from right.
VI. A is on the right side of B and to the right side of E.
VII. A and C are sitting together.

10. At what position is A sitting?

(a) Between B and C
(b) Between D and C
(c) Between E and D
(d) Between C and E

11. Who is sitting at the centre?

(a) A (b) B (c) C (d) D

12. What is the position of B?

(a) Second from right (b) Centre
(c) Extreme left (d) Second from left

13. What is the position of D?

(a) Extreme left (b) Extreme right
(c) Third from left (d) Second from left

Directions (Q. Nos. 14-18) Read the following information and answer the questions given below

I. A, B, C, D, E, F, G and H are sitting in a row facing North.
II. A is fourth to the right of E.
III. H is fourth to the left of D.
IV. C and F, who are not at the ends, are neighbours of B and E, respectively.
V. H is next to the left of A and A is the neighbour of B.

14. What is the position of F?

(a) Next to the right of E (b) Next to the right of G
(c) Sixth to the right of D (d) Between G and H

15. Which of the following statements is not true?

(a) G is the neighbour of H and F
(b) B is next to the right of A
(c) E is at left end
(d) D is next to the right of B

16. Who is/are the neighbour/(s) of D?

(a) F alone (b) C alone
(c) B and C (d) Cannot be determined

17. Which of the following statements is not true?

(a) H is second to the right of F
(b) E is fourth to the left of A
(c) D is fourth to the right of H
(d) None of the above

18. Who are sitting at the ends?

(a) E and C (b) F and D
(c) G and B (d) None of these

Directions (Q. Nos. 19-21) Study the following information carefully to answer the questions below.

Five persons are standing in a queue. One of the two persons at the extreme ends is a professor and the other is a businessman. An advocate is standing to the right of a student. An author is to the left of the businessman. The student is between the professor and the advocate.

19. Counting from the left, the author is at which place? **[CMAT 2013]**

(a) First (b) Second
(c) Third (d) Fourth

20. Which of the following is in the middle of the queue?

(a) Professor (b) Advocate
(c) Student (d) Businessman

21. If advocate and the businessman exchange their positions, and also the author and the student, then who will be standing to the left of student?

(a) Author (b) Businessman
(c) Professor (d) Advocate

Directions (Q. Nos. 22-23) Read the following information carefully and answer the questions that follow.

I. Six flats on a floor in two rows facing North and South are allotted to P, Q, R, S, T and U.
II. Q gets a North facing flat and is not next to S.
III. S and U get diagonally opposite flats.
IV. R next to U, gets a South facing flat and T gets a North facing flat.

22. Whose flat is between Q and S?

(a) T (b) U (c) R (d) P

23. The flats of which of the pair, other than SU, are diagonally opposite to each other?

(a) PT (b) QP
(c) QR (d) TS

Directions (Q. Nos. 24-27) Answer the following questions based on the information given below

A leading socialite decided to organize a dinner and invited a few of her friends. Only the host and hostess were sitting at the opposite ends of a rectangular table, with three persons on each side. The prerequisite of the sitting arrangement was that each person must be seated such that atleast on one side he/she has a person of the opposite sex. Maqbool is opposite to Sobha, who is not the hostess. Ratan has a woman on his right and is sitting opposite of a woman. Manisha is sitting to the hostess's right, next to Dhirubhai. One person is seated between Madhuri and Urmila, who is not the hostess. The men were Maqbool, Ratan, Dhirubhai and Jackie, while the woman were Madhuri, Urmila, Sobha and Manisha.

24. The eighth person present, Jackie must be

I. the host
II. seated to Sobha's right
III. seated opposite of Urmila.

(a) Only I (b) Only III (c) I and II (d) II and III

25. Which of the following persons is definitely not seated next to a person of the same sex?

(a) Maqbool
(b) Madhuri
(c) Jackie
(d) Sobha

26. If Ratan would have exchanged seats with a person four places to his left, which of the following would have been true after the exchange?

I. No person of the opposite sex was seated between two persons of the same sex (*e.g.*, no man was seated between two women)

II. One side of the table consisted entirely of persons of the same sex.

III. Either the host or the hostess changed their seats.

(a) Only I (b) Only II (c) I and II (d) II and III

27. If each person is placed directly opposite of his/her spouse, which of the following pair must be married?

(a) Ratan and Manisha (b) Madhuri and Dhirubhai
(c) Urmila and Jackie (d) Ratan and Madhuri

Directions (Q. Nos. 28-32) Study the information carefully and answer the question. **[IBPS (Clerk) 2013]**

S, T, U, V, W, X, Y and Z are sitting around a circle area, with equal distance amongst each other but not necessarily in the same order.

Only two people face the centre and the rest face outside (*i.e.*, in a direction opposite to the centre).

Y sits second to left of W. S sits second to left of Y. Only one person sits between S and Z. T sits to immediate right of S. T is not an immediate neighbour of Y. V is not an immediate neighbour of Y.

Both the immediate neighbours of X face the centre.

28. Who is sitting to immediate right of Z?

(a) Y (b) V
(c) T (d) X
(e) W

29. Which of the following is true regarding U as per the given sitting arrangement?

(a) X sits second to left of U
(b) Only three people sit between U and Y
(c) Z is one of the immediate neighbours of U
(d) U faces the centre
(e) S sits to immediate left of U

30. What is T's position with respect of Y?

(a) Second to the right
(b) Second to the left
(c) Fifth to the left
(d) Fourth to the right
(e) Third to the left

31. Which of the following groups represents the immediate neighbours of X?

(a) WY (b) VW
(c) TZ (d) VZ
(e) SU

32. Four of the following five are alike in a certain way based on the given seating arrangement and so form a group. Which is the one that does not belong to that group?

(a) Z (b) T (c) Y (d) V
(e) X

Directions (Q. Nos. 33-34) Read the following information carefully to answer the questions given below

Eight friends P, Q, R, S, T, U, V and W are sitting around a circular table facing centre, Q is sitting between V and S. W is third to the left of Q and second to the right of P. R is sitting between P and V. Q and T are not sitting opposite to each other.

33. Which of the following statements is not correct?

(a) S and P are sitting opposite to each other.
(b) V and Q are not sitting opposite to each other.
(c) R and T are sitting opposite to each other.
(d) None of the above

34. Who is third to the left of S?

(a) U (b) P (c) T (d) S

Directions (Q. Nos. 35-37) Study the given information and answer the given questions **[IBPS (Clerk) 2013]**

Six people—K, L, M, N, O and P live on six different floors of a building not necessarily in the same order. The lower most floor of the building is numbered 1, the one above is numbered 2 and so on till the top most floor numbered 6. L lives on an even numbered floor. L lives immediately below K's floor and immediately above M's floor. P lives immediately above N's floor. P lives on an even numbered floor. O does not live on floor number 4.

35. Four of the following five are alike in a certain way based on the given arrangement and hence form a group. Which of the following does not belong to that group?

(a) MN (b) OL
(c) KM (d) LP
(e) PK

36. Who amongst the following lives on floor number 2?

(a) K (b) P
(c) L (d) M
(e) O

37. On which floor does N live?

(a) 4 (b) 3
(c) 5 (d) 1
(e) 2

38. At a birthday party, 5 friends are sitting in a row. 'M' is to the left of 'O' and to the right of 'P'. 'S' is sitting to the right of 'T', but to the left of 'P'. Who is sitting in the middle? **[SSC (10+2) 2013]**

(a) M (b) O (c) P (d) S

39. A, B, C, D, E and F are sitting in a row. 'E' and 'F' are in the centre and 'A' and 'B' are at the ends. 'C' is sitting on the left of 'A'. Then who is sitting on the right of 'B'? **[SSC (Multitasking) 2013]**

(a) A (b) D (c) E (d) F

Directions (Q. Nos. 40-44) Read the information given below to answer the questions. **[CLAT 2013]**

A, B, C, D, E, F, G and H want to have a dinner on a round table and they have worked out the following seating arrangements.

I. A will sit beside C.
II. H will sit beside A.
III. C will sit beside E.
IV. F will sit beside H.
V. E will sit beside G.
VI. D will sit beside F.
VII. G will sit beside B.
VIII. B will sit beside D.

40. Which of the following is wrong?

(a) A will be to the immediate right of C
(b) D will be to the immediate left of B
(c) E will be to the immediate right of A
(d) F will be to the immediate left of D

41. Which of the following is correct?

(a) B will be to the immediate left of D
(b) H will be to the immediate right of A
(c) C will be to the immediate right of F
(d) B will be to the immediate left of H

42. A and F will become neighbours, if

(a) B agrees to change her sitting position
(b) C agrees to change her sitting position
(c) G agrees to change her sitting position
(d) H agrees to change her sitting position

43. During sitting

(a) A will be directly facing C
(b) B will be directly facing C
(c) A will be directly facing B
(d) B will be directly facing D

44. H will be sitting between

(a) C and B
(b) A and F
(c) D and G
(d) E and G

Directions (Q. Nos. 45-49) Study the following information carefully to answer the questions below

Eight friends A, B,C, D, E, F, G and H are sitting around a circle facing the centre. D is between A and E only, F is second to the left of E. B is between C and G only. F is between G and H only.

45. Who is 'FOURTH' to the right of B?

(a) H (b) D
(c) A (d) None of these

46. In which of the following pairs, second person is to the immediate left of the first person?

(a) H, E (b) D, A
(c) B, G (d) B, C

47. Which of the following is definitely true?

(a) D is second to the left of H
(b) A is second to the right of E
(c) C is to the immediate right of B
(d) E is to the immediate left of C

48. Who is the immediate left of E?

(a) D (b) A
(c) H (d) F

49. Who is third to the right of G?

(a) E (b) A
(c) C (d) D

Directions (Q. Nos. 50-53) Study the following information carefully to answer the questions below.

Six persons P, Q, R, S, T and V are sitting in a circle facing one another front to front. P is sitting in front of Q. Q is sitting to the right of T and left of R. P is to the left of U and right of S.

50. Who is sitting opposite to R?

(a) P (b) Q
(c) S (d) U

51. Who is sitting opposite to S?

(a) U
(b) T
(c) R
(d) Cannot be determined

52. Who is sitting between P and R?

(a) S (b) T
(c) U (d) Q

53. If the positions of P and R are changed, who will be sitting between S and U?

(a) P (b) R
(c) Q (d) T

Directions (Q. Nos. 54-55) Read the following information carefully to answer these questions.

[NIFT (PG) 2013]

I. P, Q, R, S, T, U and V are sitting along a circle facing the centre.
II. P is between V and S.
III. R, who is 2nd to the right of S, is between Q and U.
IV. Q is not the neighbour of T.

54. Which of the following is a correct statement?

(a) V is between P and S
(b) S is 2nd to the left of V
(c) R is third to the left of P
(d) P is to the immediate left of S

55. What is the position of T?

(a) Between R and V
(b) To the immediate left of V
(c) 2nd to the left of R
(d) 2nd to the left of Q

Directions (Q. Nos. 56-58) Read the following information carefully and answer the questions that follow.

A, B, C, D, E, F and G are playing cards sitting in a circle.

I. F is 2nd to the right of G.
II. B is the neighbour of F but not of E.
III. E, the neighbour of C, is 4th to the right of G.
IV. D is between E and A.

56. Who is fourth to the left of G?

(a) D (b) E
(c) C (d) Cannot be determined

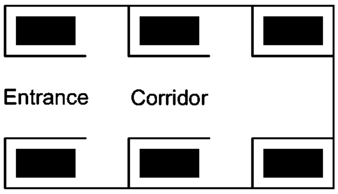
57. Who is to the left of G?

(a) A (b) C
(c) B (d) Cannot be determined

58. Who are the neighbours of F?

(a) E and C (b) F and B (c) A and B (d) C and B

Directions (Q. Nos. 59-62) Read the following information carefully and answer the questions that follow.



The above building plan shows an office block for six officers A, B, C, D, E and F. Both B and C occupy offices to the right of the corridor (as one enters the office block) and A occupies an office to the left of the corridor. E and F occupy offices on opposite sides of the corridor but their offices do not face each other. The offices of C and D face each other. E does not have a corner office. F's office is further down the corridor than A's but on the same side.

59. If E sits in his office and faces the corridor, whose office is to his left?

(a) A (b) B
(c) C (d) D

60. Whose office faces A's office?

(a) B (b) C
(c) D (d) E

61. Who is/are F's neighbour/(s)?

(a) Only A (b) A and D
(c) Only C (d) B and C

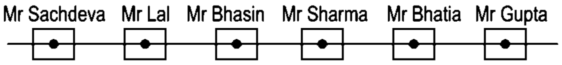
62. D was heard telling someone to go further down the corridor to the last office on the right. To whose room, was he trying to direct that person?

(a) A
(b) B
(c) C
(d) F

Master Exercise

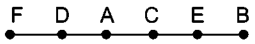
Response & Interpretations (Master Exercise)

1. (*c*) According to the question, the arrangement is as follows


Mr Sachdeva
Mr Lal
Mr Bhasin
Mr Sharma
Mr Bhatia
Mr Gupta

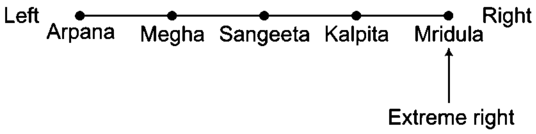
Clearly, Mr Bhasin's next door neighbours are Mr Lal and Mr Sharma.

2. (*b*) According to the question, arrangement of A, B, C, D, E and F is as follows



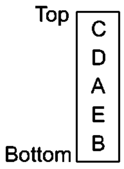
Clearly, F is sitting to the left of D.

3. (*a*) Arrangement according to the question is as follows


Left
Arpana
Megha
Sangeeta
Kalpita
Mridula
Right
Extreme right

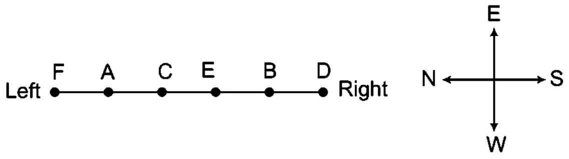
Clearly, Mridula is to the extreme right of the row.

4. (*b*) According to the given information, books are arranged as follows


Top
C
D
A
E
B
Bottom

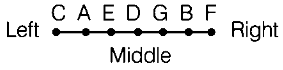
Clearly, book at the bottom is B.

5. (*b*) According to the given information, following sitting arrangement is formed.


Left
F
A
C
E
B
D
Right
E
N
S
W

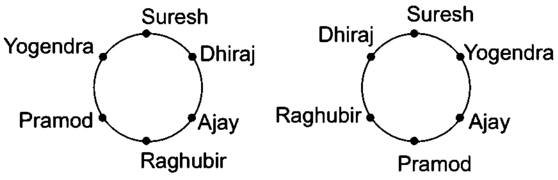
Clearly, 2 persons (*i.e.*, B and D) are to the right of E.

6. (*c*) The sequence of children in the row is as follows


Left
C A E D G B F
Right
Middle

Clearly, D is exactly in the middle.

7. (*c*) Arrangements according to the question are as follows

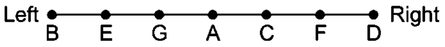

Suresh
Yogendra
Dhiraj
Pramod
Ajay
Raghubir
Suresh
Dhiraj
Yogendra
Raghubir
Ajay
Pramod

Original Arrangement

New Arrangement

Clearly, Suresh is sitting to the left of Dhiraj.

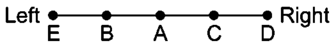
Solutions (Q. Nos. 8-9) *Arrangement according to the question is as follows*


Left
B
E
G
A
C
F
D
Right

8. (*c*) Clearly, E is second from left.

9. (*a*) Clearly, C is standing between A and F.

Solutions (Q. Nos. 10-13) *Arrangement according to the question is as follows*


Left
E
B
A
C
D
Right

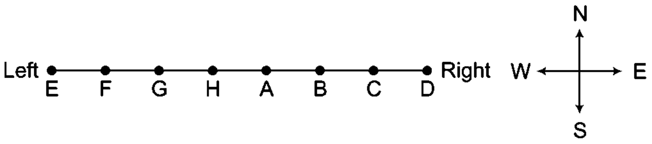
10. (*a*) A is sitting between B and C.

11. (*a*) A is sitting at the centre.

12. (*d*) B is sitting second from left.

13. (*b*) D is at the extreme right.

Solutions (Q. Nos. 14-18) *Arrangement according to the question is as follows*


Left
E
F
G
H
A
B
C
D
Right
N
W
E
S

14. (*a*) F is next to the right of E.

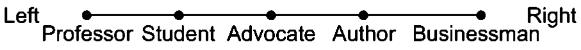
15. (*d*) D is 2nd to the right of B. Hence, statement (d) is not true.

16. (*b*) C alone is the neighbour of D.

17. (*d*) All the given statements are correct.

18. (*d*) E and D are sitting at the ends.

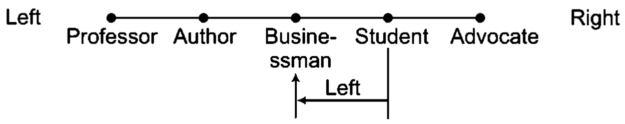
Solutions (Q. Nos. 19-21) *Arrangement according to the question is as follows*


Left
Professor
Student
Advocate
Author
Businessman
Right

19. (*d*) Clearly, author is fourth from the left.

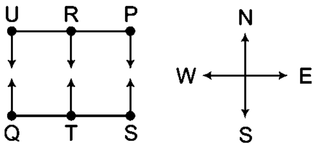
20. (*b*) Advocate is in the middle of the queue.

21. (*b*) New arrangement, according to the question is as follows


Left
Professor
Author
Businessman
Student
Advocate
Right
Left

Clearly, businessman is standing to the left of student.

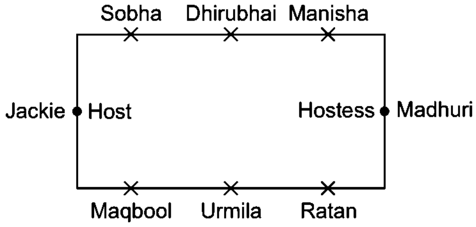
Solutions (Q. Nos. 22-23) *Arrangement according to the question is as follows*


U
R
P
Q
T
S
N
W
E
S

22. (a) Clearly, T's flat is between Q and S.

23. (b) Flats of Q and P are diagonally opposite to each other.

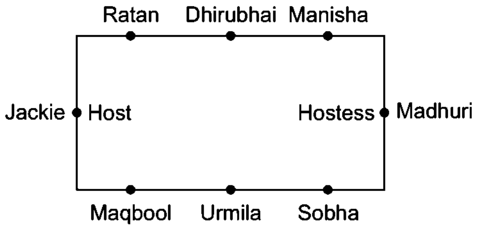
Solutions (Q. Nos. 24-27) *Based on the given information, the sitting arrangement will be as follows.*


Sobha
Dhirubhai
Manisha
Jackie
Host
Hostess
Madhuri
Maqbool
Urmila
Ratan

24. (c) Jackie is the host and sitting to Sobha's right.

25. (d) Sobha is sitting next to Jackie and Dhirubhai. So, she is the only person among the given alternatives, who is not seated next to a person of the same sex.

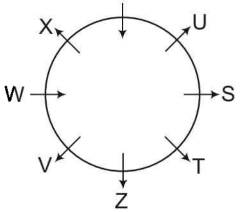
26. (a) If Ratan would have exchanged seat with a person four places to his left, which is Sobha, the following arrangement would exist.


Ratan
Dhirubhai
Manisha
Jackie
Host
Hostess
Madhuri
Maqbool
Urmila
Sobha

Statement I is true as no man is sitting between two women, also no woman is sitting between two men.

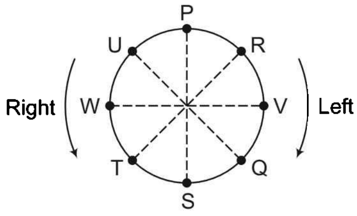
27. (a) Among the given choices, only Ratan and Manisha are sitting opposite to each other and hence they must be married.

Solutions (Q. Nos. 28-32) *From the given information, sitting arrangement of all the persons is as follows.*



28. (b) **29.** (a)
30. (e)
31. (a) **32.** (c)

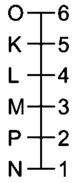
Solutions (Q. Nos. 33-34) *Arrangement according to the question is as follows*


P
U
R
Right
W
V
Left
T
Q
S

33. (d) All the statements are correct.

34. (a) Clearly, U is third to the left of S.

Solutions (Q. Nos. 35-37) *Arrangement according to the question is as follows*

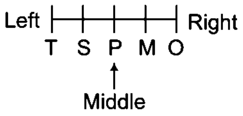

O 6
K 5
L 4
M 3
P 2
N 1

35. (e) Clearly, PK does not belongs to the group.

36. (b) Clearly, P lives on floor number 2.

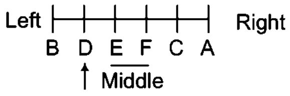
37. (d) Clearly, N lives on floor number 1.

38. (c) Arrangement according to the question is as follows


Left
Right
T S P M O
Middle

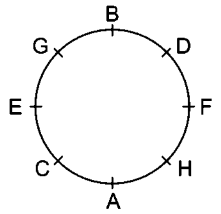
It is clearly shown that 'P' is sitting in the middle.

39. (b) Arrangement according to the question is as follows


Left
Right
B D E F C A
Middle

Clearly, 'D' is to the right of B. Hence, option (b) is the correct answer.

Solutions (Q. Nos. 40-44) *Following sitting arrangement is formed from the given information.*



40. (c) Clearly, E is not to immediate right of A.

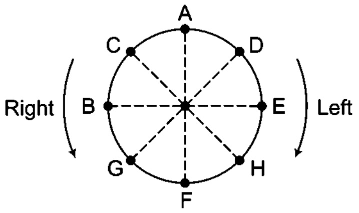
41. (b) Clearly, H will be to the immediate right of A.

42. (d) A and F will become neighbours, if H agrees to change her sitting position.

43. (c) Clearly, A will be directly facing B.

44. (b) Clearly, H is sitting between A and F.

Solutions (Q. Nos. 45-49) *Arrangement according to the question is as follows*


A
C
D
Right
B
E
Left
G
H
F

45. (*d*) E is fourth to the right of B.

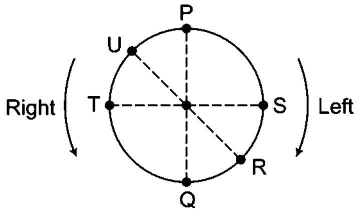
46. (*d*) C is to the immediate left of B.

47. (*b*) A is second to the right of E.

48. (*c*) H is to the immediate left of E.

49. (*a*) E is third to the right of G.

Solutions (Q. Nos. 50-53) *Arrangement according to the question is as follows*

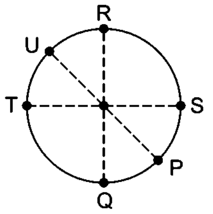


50. (*d*) U is sitting opposite to R.

51. (*b*) T is sitting opposite to S.

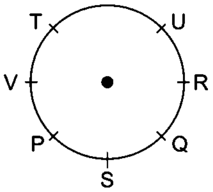
52. (*a*) S is sitting between P and R.

53. (*b*) New arrangement, according to the question, is as follows.



Clearly, R is sitting between S and U.

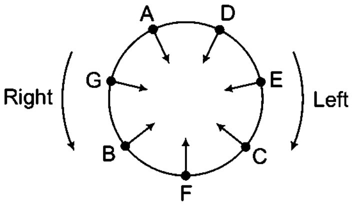
Solutions (Q. Nos. 54-55) *Following sitting arrangement is formed from the given information.*



54. (*d*) Clearly, P is to the immediate left of S.

55. (*b*) Clearly, T is to the immediate left to V.

Solutions (Q. Nos. 56-58) *Arrangement according to the questions is as follows*

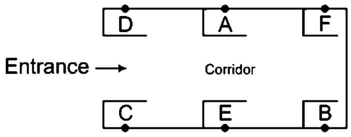


56. (*c*) C is fourth to the left of G.

57. (*a*) A is to the left of G.

58. (*d*) C and B are the neighbours of F.

Solutions (Q. Nos. 59-62) *After analysing the given information, we can draw the following diagram*



59. (*c*) C's office is to the left of E.

60. (*d*) E's office faces A's office.

61. (*a*) A is the only neighbour of F.

62. (*b*) B's office is the last office on the right side of corridor. So, D was trying to direct the person to B's office.

16

Situation Reaction Test

Situation Reaction Test is designed to test the reasoning power of the candidate. This test is mainly done to judge a candidate's ability to use his presence of mind and to act correctly and promptly to a given situation that may arise any time in life.

In these questions, a situation related to the day-to-day life is given along with four alternatives which gives various probable reactions to these situations. The candidate is required to find out the most appropriate reaction to these situations. For solving these questions, first of all try to analyse the demand of the situation. Depending upon the need, try to analyse the pros and cons of each alternative and then choose that alternative which solves the problem and the purpose without any negative effect.

Important Points for Choosing the Suitable Reaction

- Grasp the essential of the situation before you react *i.e.*, understand the situation.
- Don't be vague in your reaction.
- The candidate should use his presence of mind.
- The reaction to the given situation should be ideal.
- The reaction to the situation should be the best way to solve the problem.
- The reaction to the situation should be morally correct.
- The reaction to the situation should be as immediate action to the problem.
- The reaction to the situation should be positive.
- The decision/reaction should be responsible one.

You will get a better idea about the type of questions asked, from the examples given below

***Ex* 1** If on a tough day you are the only person available to handle the customers, you should

(a) ask for additional help from the boss
(b) take leave and go back home
(c) just do your part of the work
(d) try and work to the maximum of your ability to satisfy customers

Sol. (*d*) Clearly, an ideal professional is expected not to shirk his duties but to work hard and strive to satisfy his customers/clients.

***Ex* 2** Your friends like smoking and influence you to do the same. You will

(a) smoke only because your friends are smoking
(b) refuse to smoke
(c) smoke but only in their presence
(d) refuse and lie to them that you have asthma

Sol. (*b*) Clearly, one should have a strong will-power, so as not to yield to easy temptations and indulge in any activity that shall later prove to be harmful.

***Ex* 3** While travelling in a train, you notice that a man fall off the train from the coach behind yours coach. You would **[Hotel Mgmt 2010]**

(a) pull the alarm chain, so that the train may stop and the man may be helped
(b) shout at the falling man asking him to get up quickly and entrain
(c) jump off the train to assist the falling man
(d) wait till the train stops at the next station and inform the railway authorities there

Sol. (*a*) Clearly, the situation demands taking quick action to provide help to the victim which in turn requires that the train be stopped immediately.

***Ex* 4** You are a team manager. You find that your employee's performance is inappropriate that induces/creates stress for you. You should **[CG PSC 2013]**

(a) explore the reason of inappropriate performance and report to the higher authorities
(b) start an incentive mechanism for better performance
(c) create an organisational culture in which the employee feels to be concerned
(d) implement special human resource training for the employees

Sol. (*c*) Reporting the reasons to the higher authorities as mentioned in option (a) shows your inability to tackle the problem while options (b) and (d) do not serve the purpose effectively.

For improving employee's performance, Team manager should create an organisational culture in which the employee feels to be concerned as mentioned in option (c). So, option (c) is the best possible solution to this problem.

***Ex* 5** If you are a manager and one of your employees is not working properly, as a manager you would

(a) fire him
(b) give the man two weeks to improve
(c) try to develop the man's abilities and interest in another job
(d) talk to him and try to find out his problem

Sol. (*d*) Clearly, the work of manager is to manage and see to his employee's problem if any such situation arises and leads to improper work by him/her. So, as a manager I should talk to him and try to find out his problem.

***Ex* 6** While attending your friend's party, you see your friend's muffler catching fire from the candle on the table behind him. You would

(a) ask your friend to see behind him
(b) rush to call friend's mother
(c) rush and taking out the muffler from his neck, drop it and pour water on it
(d) take out the muffler and throw it away

Sol. (*c*) Clearly, the situation demands to rescue the friend from fire, so correct reaction is given in option (c) *i.e.*, to rush and take out the muffler from his neck, drop it and pour water on it.

***Ex* 7** After having committed to your family that you would be taking them out on a vacation, you suddenly find yourself wanted in a board meeting which unfortunately clashes with the vacation. What would you do? **[Hotel Mgmt 2004]**

(a) Assuming it to be urgent, start making necessary arrangement to ensure that the reason for the meeting is fulfilled, thus cancelling the vacation
(b) Find out what the urgent meeting is all about and make necessary arrangements and postpone your vacation
(c) Proceed with your vacation plans without making any arrangement
(d) Try and get out of that situation by asking your colleague to cover up for you

Sol. (*b*) As a responsible working professional, you need to fulfill the demand of the situation. In this situation, you have to postpone your vacation, find out the cause of the meeting and need to make necessary arrangements.

Master Exercise

Take a Leap...

1. When you get angry, you usually
(a) throw things
(b) withdraw yourself and start crying
(c) leave the situation and engage yourself in a different activity
(d) None of the above

2. Your maid has invited you to her daughter's wedding. You would **[Hotel Mgmt 2008]**
(a) completely ignore her
(b) attend the wedding
(c) buy a gift for her daughter and help in wedding
(d) congratulate her and make up some excuse for not being able to attend

3. When you see a blind man trying to cross the road, you
(a) wait till he crosses the road
(b) ask someone to help him
(c) go and help him
(d) ignore and move on

4. You are walking down the street and suddenly you see two hundred rupee notes on the pavement. What action will you take?
(a) Deposit it in the nearest police station
(b) Pocket it yourself
(c) Leave it where it is
(d) Give the money to a beggar

5. Your bathroom tap is leaking and is a constant source of irritating noise. You would
(a) sleep with pillows upon your ears
(b) put a bucket underneath
(c) call a plumber to repair the tap
(d) try to put up a cork upon the mouth of the tap

6. You are having tea in your office, some of the tea spills on your clothes. You will **[CG PSC 2013]**
(a) call the peon to wipe off the tea from your clothes
(b) yourself wipe off the tea from your clothes
(c) hide the stain marks
(d) ask the peon to fetch clothes from your house

7. If in an examination hall, you find the question paper is too tough to be answered satisfactorily by you, the best thing to do for you is to **[NIFT (UG) 2005]**
(a) tell the examiner that the questions are out of course
(b) provoke the candidates to walk out of the examination hall
(c) try to know something from your neighbour
(d) try to solve the questions as much as you know with a cool head

8. You are a member of the sports team of your college. One day due to misunderstanding, other members stop talking to you. You
(a) ask someone to mediate
(b) wait till they come and start talking again
(c) keep to yourself and let things take their time for improving
(d) go forward and start talking

9. You are a guest at a dinner. The host asks you to take one more chapatti after your stomach is full. You would
(a) make a bad face at him
(b) take the chapatti
(c) politely say that the food was too good and you have already eaten much
(d) make a blunt refusal

10. You are head of your office. Some media people come to your office and request you to brief them about the pension plan of your office. You will **[CG PSC 2013]**
(a) aks the media people to come some another day
(b) immediately accept the offer and brief them
(c) get them turned out of your office
(d) ask them to wait and to consult the officials concerned

11. Your classmate, who got you in a fix recently with a teacher, has met with an ancient. You
(a) feel that God taught him/her a lesson
(b) carry on with life unaffected
(c) tell others that this is the way one suffers for making others suffer
(d) decide to visit him/her in the hospital

12. **After a purchase, the shopkeeper returns ₹ 100 extra to you. You will** **[NIFT (UG) 2005]**

(a) treat your friends to a lunch
(b) offer ₹ 20 at a temple and pray for more such instance
(c) hope he will give another ₹ 100 extra
(d) return the extra money to the shopkeeper

13. **Your family is going to your aunt's house, whom you do not particularly like. What would you do?**

(a) Stay at home and enjoy yourself
(b) Go to your aunt's house but stay outside
(c) Go to your aunt's place and maintain a comfort level
(d) Try and convince your brother and sister to stay back with you as you cannot stay back at home

14. **Your colleague is not performing his duties upto the mark. You will**

(a) just do your part of the duties and enjoy your work
(b) take advantage of it to promote yourself
(c) report to the seniors
(d) try and handle his customers to maintain the company's status

15. **When someone demands something undesirable, you**

(a) always try to avoid the man
(b) neglect the person and leave the place
(c) always try to explain your inability to meet the demand
(d) try to teach him a lesson, so that he does not repeat the same behaviour

16. **Your classmate who is usually very energetic and happy all the time looks very down and upset. You**

(a) carry on with your work
(b) tell one of your friends to go and talk to her
(c) go up to her and ask the reason
(d) wait for her to come up and tell you the reason

17. **You are in a bus. The bus reaches your stop but still you have not purchased the ticket because of heavy rush. What will you do?**

(a) Jump out quickly to avoid embarrassment
(b) Call the conductor give him the money and get the ticket
(c) Hand the money to someone sitting nearby to give it to the conductor
(d) Give the money to the driver

18. **You are getting late for your college and no bus is available. In such a situation**

(a) you start walking
(b) you drop the idea of going to college that day and return home
(c) you think about other possible conveyance
(d) you wait patiently for the bus though you are late for the class

19. **Suppose one of your friends drops your camera while handling it carelessly. You would**

(a) ask him to buy a new camera and replace it
(b) never keep any connection with him
(c) be very much annoyed
(d) tell him to be careful while handling such delicate things

20. **You are alone in the house and your sister-in-law is suddenly experiencing labour pains. You**

(a) would definitely get upset and do not know what is the right step
(b) go out of the house to call your family doctor
(c) walk her to the nearest hospital
(d) call an ambulance for emergency

21. **You are a sincere and dedicated manager in a reputed five star hotel. You have been appointed as the Chief Manager of the Guwahati branch which needs to be developed. Your salary has been hiked.**

(a) You give it a shot for two months and see how it goes
(b) You accept the challenge and go ahead with the project
(c) You accept another offer and leave the job
(d) You crib for limited resources and try to convince the superior to send somebody else instead of you

22. **You are competing with your batchmate for a prestigious award to be decided based on an oral presentation. Ten minutes are allowed for each presentation. You have been asked by the committee to finish on time. Your friend, however is allowed more than the stipulated time period. You would** **[UPSC (CSAT) 2012]**

(a) lodge a complaint to the chairperson against the discrimination
(b) not listen to any justification from the committee
(c) ask for withdrawal of your name
(d) protest and leave the place

23. **While travelling in a train, you observe some college students pulling the alarm chain simply to get down at their desired point. You would**

(a) with the help of some passengers, check them from doing so
(b) let them pull the chain but check them from detraining
(c) inform the guard of the train as soon as it stops
(d) keep quiet and do nothing

24. **You have been transferred to a new department. You find that most of the staff members criticise one another. You should** **[CG PSC 2013]**

(a) try to know the weakness of staff members
(b) hold a meeting and try to create an organisation culture
(c) overlook the matter
(d) complain to the higher authorities

25. You are the manager of the department. You get to know that one of the subordinates is having a problem with his family, since his father is supposed to undergo bypass surgery but at the same time the subordinate is very important for the current project which you have undertaken. The subordinate wants two weeks' leave. What would you do?

(a) Give him your support by assuring him that his duty towards his father is more important
(b) Not empathise with the employee's situation and ask him to stay
(c) Get an extension for the project to be submitted as the employee is very efficient and you cannot trust anyone else
(d) Transfer the work to some other employee of similar caliber

26. You have to accomplish a very important task for your headquarters within the next two days. Suddenly you meet with an accident. Your officer insists that you complete the task. You would **[UPSC (CSAT) 2011]**

(a) ask for an extension of deadline
(b) inform headquarters of your inability to finish on time
(c) suggest alternate person to Headquarters who may do the needful
(d) stay away till you recover

27. You are passing by a river and you know swimming. Suddenly you hear the cry of a drowning child. You would

(a) wait to see, if some other person is there to help
(b) dive into the river to save him
(c) look for professional divers
(d) console the childs parents

28. You have been asked to give an explanation for not attending an important official meeting. Your immediate boss who has not informed you about the meeting is now putting pressure on you not to place an allegation against him/her. You would **[UPSC (CSAT) 2013]**

(a) send a written reply explaining the fact
(b) seek an appointment with the top boss to explain the situation
(c) admit your fault to save the situation
(d) put the responsibility on the coordinator of the meeting for not informing

29. You are a team leader and you are supposed to hold a convention on HR issues but your team members are unable to get adequate sponsorship.

(a) You put in your money and hold the event as scheduled
(b) You try and motivate them that they can do it
(c) You postpone the event and give them some more time
(d) You tell them things can work out like this and cancel the event

30. You are a manager of a company and an employee does not turn up for work because his son was ill. You will **[Hotel Mgmt 2004]**

(a) tell him to come on time now onwards no matter what
(b) ask him how his son is and give him a day off
(c) give him a strict warning
(d) ask how his son is and tell him to call the office, if even in future he decides not to come

31. Your friend has lost his/her purse with your important documents in it. You would

(a) feel angry but do not react as anyone can make mistakes
(b) feel angry and ask him/her to replace/duplicate the documents
(c) understand the situation and tell him/her that it's ok and not to worry about it
(d) blame him/her for being careless and stop talking to him/her

32. After your graduation, you are offered a well paid Government job. However, your friend says that you have to pay bribe to get the appointment order. You **[Hotel Mgmt 2004]**

(a) go to some influential politician who can help
(b) accept the job by paying the bribe, consoling yourself that this is the present social setup
(c) accept the job by paying the bribe but firmly resolve that this is the last time you will pay bribe
(d) flatly refuse the offer

33. You are alone in the house and there is quite a danger of thieves around. Just then, you hear a knock at the door. You would

(a) open the door to see who is there
(b) first peep out from the window to confirm whether you know the person
(c) not open the door
(d) ask the servant to see who is there

34. While travelling in your car, certain persons stop you on the way asking you to take an injured child to the hospital. You would

(a) ask them to leave your way and then drive away
(b) ask them to first call the police
(c) immediately take the child to hospital
(d) get out of the car and ask some other person to help them

35. You are handling a time bound project. During the project review meeting, you find that the project is likely to get delayed due to lack of cooperation of the team members. You would **[UPSC (CSAT) 2012]**

(a) warn the team members for their non-cooperation
(b) look into reasons for non-cooperation
(c) ask for the replacement of team members
(d) ask for extension of time citing reasons

36. You are in the middle of an important dinner party when the waiter spills steaming hot soup all over the boss'lap. How would you cope?

(a) You panic and start shouting on the waiter
(b) Arrange for the first aid and make arrangements to rush him or her off to the hospital
(c) You dab frantically at the ruined outfit with a napkin while screaming at the waiter
(d) You pour the entire contents of a jug of water over his lap, explaining that your prompt action will prevent burns and then lay out a change of clothes in the guest bedroom and return to the party while the boss changes

37. While addressing people in an open ground, it begins to rain. Your address is important and you cannot afford to postpone it. What will you do? you would **[CG PSC 2013]**

(a) ask someone to arrange an umbrella
(b) stop your address for a while
(c) continue the address without bothering the rain
(d) postpone it for a day

38. You are playing football in a park. When you kick the ball, it strikes and breaks the window pane of a nearby house. You would

(a) demand your ball back from the house owner
(b) say that it was no fault of yours
(c) stealthily get your ball back
(d) apologise to the house owner and contribute to replace the glass

39. You are an officer incharge for providing basic medical facilities to the survivors of an earthquake affected area. Despite your best possible effort, people put allegations against you for making money out of the funds given for relief. You would **[UPSC (CSAT) 2011]**

(a) let an enquiry be set up to look into the matter
(b) ask your senior to appoint some other person in your place
(c) not pay attention to allegations
(d) stop undertaking any initiative till the matter is resolved

40. You are suffering from diabetes. When you see a whole lot of chocolates, you are tempted to eat them but you also realise that they are not good for you in the long run. What do you do? **[Hotal Mgmt 2005]**

(a) You would not eat them because you know the harmful effects
(b) You decide not to eat them but keep thinking about them
(c) You would eat them but feel guilty about what you have done
(d) You would give in to the temptation and eat the chocolates without being bothered about the consequences

41. You want to get married to a person of your choice, but your family members give their own reasons why you should not marry that person, which you do not find very convincing. What would you do?

(a) Go by what your family says
(b) Become thoroughly confused and still remain undecided
(c) Marry the person of your choice
(d) Try to convince your family about your choice

42. You just got to know that your friend has met with an accident and hearing this you immediately leave for the accident spot along with one more friend. In a hurry, you forgot to take your licence and helmet. You were flagged down to stop at the traffic intersection by the traffic constable. You will **[CG PSC 2013]**

(a) dodge the policeman
(b) stop and pay fine
(c) stop and reason it out with about the policeman
(d) stop and use references

43. You are handling a priority project and have been meeting all the deadlines and are therefore planning your leave during the project. Your immediate boss does not grant your leave citing the urgency of the project. You would **[UPSC (CSAT) 2012]**

(a) proceed on leave without waiting for the sanction
(b) pretend to be sick and take leave
(c) approach higher authority to reconsider the leave application
(d) tell the boss that it is not justified

44. If you find yourself in a situation where you are required to make a power point presentation and you are already bogged down by too much work, as the manager what would you do?

(a) Take an alternative mode of presentation
(b) Cancel the seminar and reschedule according to your convenience
(c) Pass the buck to your subordinate, you are the boss, on one can question you
(d) Prioritise your work and try to squeeze out time for it

45. You have worked hard on an idea which you believe would be a breakthrough but the presentation does not go as you had hoped it would. You **[Hotel Mgmt 2004]**

(a) ignore all the suggestions and believe that you were correct
(b) break down and get all the emotional
(c) take this as a learning experience and convince yourself that you would do better the next time
(d) feel like a loser

46. You have taken up a project to create night shelters for homeless people during the winter season. Within a week of establishing the shelters, you have received complaints from the residents of the area about the increase in theft cases with a demand to remove the shelters. You would **[UPSC (CSAT) 2011]**

(a) ask them to lodge a written complaint in the police station
(b) assure residents of an enquiry into the matter
(c) ask residents to consider the humanitarian effort made
(d) continue with the project and ignore their complaint

47. You have a pharmaceutical company. You have received information that someone who is not an employee has tampered with a certain type of tablets in a specific area, which has caused some deaths in that area. In this type of crisis, what will you do? **[Hotel Mgmt 2006]**

(a) This incident can have a negative effect on your company's reputation and earnings and can lead to loss. In order to avoid this you don't launch a campaign to alert the people
(b) Launch a campaign to alert the public and recall tablets from the specific area
(c) Recall tablets from only the specific area and not the whole country
(d) Recall those tablets from the entire country despite the fact that the tampering of tablets occurred in a certain area

48. While sitting in a park, you observe that a smart young man comes to the place on a scooter, leaves it there and goes away with someone else on a motorbike. You would

(a) call back the person
(b) remain engaged in your enjoyment
(c) chase the person
(d) inform the police at the nearby booth

49. A person lives in a far off village which is almost two hours by bus. The villager's neighbour is a very powerful landlord who is trying to occupy the poor villager's land by force. You are the District Magistrate and busy in a meeting called by a local minister. The villager has come all the way, by bus and on foot, to see you and give an application seeking protection from the powerful landlord. The villager keeps on waiting outside the meeting hall for an hour. You come out of the meeting and are rushing to another meeting. The villager follows you to submit his application. What would you do? **[UPSC (CSAT) 2013]**

(a) Tell him to wait for another two hours till you come back from your next meeting
(b) Tell him that the matter is actually to be dealt by a junior officer and that he should give the application to him
(c) Call one of your senior subordinate officers and ask him to solve the villager's problem
(d) Quickly take the application from him, ask him a few relevant questions regarding his problem and then proceed to the meeting

50. You are moving across the road on a scooter when you observe that two boys on a bike snatch a lady's gold chain and side away. You would

(a) console the women
(b) chase the boys to catch hold of them
(c) inform the police about the matter
(d) stand and see what happens

51. On reaching the railway station, you find that the train you wanted to catch is just to start and there is hardly any time for purchasing the ticket. The best thing for you is to

(a) rush to the train rather than miss it and inform the T.T.I. at the next stoppage about your inability to purchase the ticket
(b) rush to the train and perform your journey quietly
(c) first purchase the ticket and then catch the train, if it is there
(d) miss the train than take the risk of boarding the moving train

52. A train is coming and you are standing at the station. Suddenly you notice that the railway track is broken. You will

(a) inform the authority to take necessary action
(b) leave the station
(c) use some means to stop train immediately
(d) None of the above

53. You are drinking your car on the road when you hit against a fruit vendor's cart. You would

(a) escape from the site by driving away
(b) abuse the fruit vendor for putting his cart on the way
(c) pay the fruit vendor for the damage done to him
(d) insist that it was not your fault

Response & Interpretations (Master Exercise)

1. (*c*) The best mode to overcome anger is not to vent it on things or people around but to divert your mind to a different indulgence. Hence, the answer is option (c).

2. (*c*) Clearly, the situation demands helping the maid by contributing towards the wedding as much as one can. Hence, the best answer is option (c).

3. (*c*) Here, you must have to show your humanity by helping the blind man in crossing the road.

4. (*a*) As the money lying on the street is not yours, so keeping it with yourself or giving it to a beggar is not ethical. The correct action in this situation is to deposit that money in the nearest police station so that the genuine owner of the money will receive that money.

5. (*c*) As the tap is leaking, sleeping, putting a bucket underneath or putting a cork upon the mouth of the tap will not solve the problem, so you must call a plumber to repair the tap.

6. (*b*) Here, option (a) is not valid on moral grounds while option (c) shows that you are more concerned about your clothes and grooming rather than your work. In this case, option (b) will be the best reaction to perform.

7. (*d*) Clearly, an ideal student shall never be exposed to create a row over such an issue or try to copy the answers. Also, a situation can best tackled by not creating panic rather trying to solve it with a cool head. Hence, the best answer is option (d).

8. (*d*) As you are a member of the team, so to maintain the healthy relationship with other team members you must try to clear the misunderstandings by talking to the other members.

9. (*c*) In the given situation, you must be polite enough to the host of the dinner while refusing to take more chapatti. So, the action given in option (c) is appropriate.

10. (*d*) Here, options (a) and (c) are not appropriate as these are not valid on ethical grounds while option (b) is also not valid as you are the head of the office and you have certain important tasks to accomplish.

In this case, option (d) would be the best course of action as there are certain officials for each work in every office, so one has to consult them.

11. (*d*) In the given situation, you must have to show humanity but not revenge here on moral ground. So, here the best action is to visit him/ her in the hospital.

12. (*d*) As the extra money which the shopkeeper has given to you does not belong to you, you must return it to the shopkeeper.

13. (*c*) As your whole family is going to your aunt's house, you also have to go with your family. In that situation, you need to maintain a comfort level at your aunts's house.

14. (*d*) In the given situation as a committed employee, you have to try and handle your colleague customers to maintain the company's status.

15. (*c*) When someone demands something undesirable, avoiding or neglecting the person does not solve the problem. You must try to explain the person about your inability to meet the demand.

16. (*c*) As you know that, your classmate usually remain happy and energetic, you have to go to her and ask about the reason for her upsetness.

17. (*b*) As you have travelled in the bus but was unable to purchase the ticket during the journey due to heavy rush, you must give the money to the conductor and get the ticket before leaving the bus.

18. (*c*) As you are getting late for the college and no bus is available. In that situation you must have go for other possible conveyance, so as to reach the college at time other option are not the solution to this problem.

19. (*d*) In this situation, you have to be polite with your friend but also you make understand your friend that these delicate things must be handled carefully.

20. (*d*) Clearly, the situation demands taking the lady to the hospital without much delay. Leaving her alone at home to go out in search of help or to make her do excess strain in the act of reaching hospital shall surely not be appropriate.

21. (*b*) As you are a sincere and dedicated manager, you must be committed to the work which is assigned to you. So, you must have to accept the challenge and go ahead with the project.

22. (*a*) Withdrawal of your name is an escapist attitude. Protesting is correct but lodging a complaint to the concerned authority will give the result. So, option (a) is the best course of action.

23. (*a*) Pulling the alarm chain of the train without any emergency is a crime. You must have to take help of other passengers to stop the students from doing this wrong act.

24. (*b*) Here option (a) does not serve the purpose. Option (c) shows your negligence that you are not interested in maintaining healthy working environment in your department while option (d) shows your inability to tackle the problem. So, in this case option (b) is the best possible solution.

25. (*d*) As both completion of your project and your subordinate attending to his father are important. So, you must transfer your subordinate work to some other employee of similar caliber.

26. (*b*) Informing headquarters of your inability to finish the work on time, explaining the reason is the best action. So, answer is option (b).

27. (*b*) The situation demands immediate action to save the child. As you know swimming, you must have to dive into the river for saving the child without any delay for waiting someone else to come for help.

28. (*a*) As you have been asked to give an explanation, so it is the best way to give a written reply explaining the fact. Hence, answer is option(a).

29. (*b*) As your have the responsibility to hold the convention, so canceling or postponing the event does not hold good for you. In this situation, you have to try to motivate your team members, so as to achieve an adequate sponsorship.

30. (*d*) As the son of your employee was ill, asking about his son's health is humane. Also, you have to make him understand that informing about the leave is necessary, so that the work can be managed accordingly.

31. (*a*) In the given situation, you must understand your friends's situation as anyone can make mistakes. So, you need not react to the situation.

32. (*d*) Offering bribe is an unethical action. So, you must not indulge in these type of activities and flatly refuse the offer.

33. (*b*) As you are alone in the house and there is a danger of thieves, you must check who is at the door before opening the door so that you must be sure that the person coming to you is not unknown.

34. (*c*) Here, the injured child needs immediate treatment. So, calling the police or leaving the child for someone else help shall surely not be appropriate as it will lead to much delay in the treatment process clearly, the situation demands taking the child immediately to the hospital.

35. (*b*) Looking into reasons for non-cooperation and then rectifying it is the correct step. Options (c) and (d) show lack of leadership qualities. Option (a) will not solve the problem permanently. So, option (b) is correct.

36. (*d*) In the given situation, pouring water over your boss lap is required as it will prevent burns. Also, the dinner party is equally important, you can arrange changing of clothes for your boss and return to the party.

37. (*c*) Asking someone to arrange an umbrella as mentioned in option (a) will not be moral while options (b) and (d) do not serve the purpose as it is mentioned that it is important and you cannot afford to postpone it.

Here, in this case continuing the address without bothering the rain as mentioned in option (c) will be the best course of action.

38. (*d*) As the glass was broken because of your fault, you must apologise to the house owner and contribute to replace the glass.

39. (*c*) As you are doing your work honestly and with complete dedication, so that best action is not to pay attention to the allegations. Hence, answer is option (c).

40. (*a*) As you are diabetic, you would not eat then because it will lead to harmful effects in the long run.

41. (*d*) The best way to settle a conflict is always to arrive at a consensus through peaceful talks and mutual discussions rather than stick to any one side and ignore the other.

In the given situation, since the person concerned doesn't find the views of the family members convincing, he should try to convince them and mound their views to match his own.

Just following his own choice shall hurt the family's sentiments and obeying the family members blindly shall surely be disloyalty towards the person you loves.

42. (*b*) The policeman is doing his duty, so he won't understand your reason. Also, that would be a wastage of time, so option (c) is eliminated. Dodging the policeman is making a crime, hence it is also not ethical.

Using references is again not an ethical behaviour. Hence, the most appropriate option is (b) as you have done a mistake, so you have to pay fine for it.

43. (*c*) Option (a) shows your adamant attitude. Option (b) is ethically not permitted. Arguing with the immediate boss is not correct as it will not bring any result. Option (c) is the best course of action.

44. (*d*) A manager is one who has the expertise to manage tasks properly. So, it becomes his prime responsibility to rearrange his work schedule properly and work out the required time for the project rather than postpone it or hand it over to someone else.

Hence, the best answer is option (d).

45. (*c*) To be a successful person, you must learn from your mistakes and convince yourself that you would do better the next time.

46. (*b*) As a responsible project manager, it is your responsibility to pacify the residents, who have complained to you. The best action in such situation is to assure residents of an inquiry into the matter.

47. (*b*) In this crisis situation, you must take an authoritative step to launch a campaign to alert the public and also you have to recall the tablets that specific area.

48. (*d*) The given situation demands a prompt action as there may be some bomb or some other illegal things in the scooter which he has left there chasing the person on your own may be risky. So, the correct action in this situation is to inform the police at the nearby booth.

49. (*d*) Here, we have two objectives to achieve at the same time. Firstly, we have to help the villager who has come from far off. Secondly, we have to reach the second meeting on time. Option (d) allows us to achieve both.

Option (c) also achieves the same objectives though it means that the villager will have to wait for a little more time. Options (a) and (b) are wrong as, they will increase the troubles of the villager who might not be able to wait longer.

50. (*b*) In this situation, you should chase the boys to catch hold of them the best answer is (b).

51. (*a*) In the given situation, rush to the train rather than miss it and inform the T.T.I at the next stoppage about your inability to purchase the ticket.

In this case the option (a) is the best action to perform.

52. (*c*) Obviously, you cannot let thousands of innocent people die, just like that. You have to act immediately, as a fraction of second might prove to be all the difference.

53. (*c*) In the given situation, you must have to show humanity. You should pay the fruit vendor for the damage done to him. So, the best is option (c).

17

Decision Making

Decision making is a process in which a final outcome is derived by evaluating and analysing the given information.

Different types of questions covered in this chapter are as follows

- Eligibility Test
- Passage Based Decision Making

In some questions, conditions regarding the selection or non-selection of a candidate along with the biodata are given based on which his eligibility has to be decided. In other type of questions, a paragraph of information is given based on which the questions are to be answered in a relevant manner.

Questions from this chapter are designed to judge the decision making capability of a candidate.

Type 1 Eligibility Test

In these type of questions, a set of necessary conditions and qualifications required to be fulfilled by the candidate for a certain vacancy in job/ promotion / admission in a college, along with the biodata of certain candidates who have applied for the same is given. You are required to evaluate and assess a candidate's eligibility and thereby decide upon the appropriate course of action to taken from among the given alternatives.

Let us consider following example to understand the format of questions asked and the basic step involved in solving these questions

Directions (Example Nos. 1-7) Read the following information carefully and answer the questions given below it.

Following are the conditions for short listing candidates for the post of Customer Relations Officers (CRO) for XYZ Limited. The candidate to be called for interview must

A. be a graduate in Science *i.e.*, B. Sc. with minimum 55% marks.
B. have atleast 3 yr experience in selling/ marketing.
C. have participated in debating or drama or sports at the inter college level onwards.
D. have secured minimum 60% marks in the written examination.
E. be ready to deposit ₹ 10000 as security deposit.

However, in case of a candidate who fulfils all these criteria except

(i) (D) above but has secured minimum 60% in B. Sc. may be referred to the Chief Manager, Customer Relations (CR).

(ii) (A) above but has passed M.Sc. *i.e.*, post-graduation in Science, with minimum 50% marks, may be referred to DGM (CR).

Based on these criteria and information provided below, decide the courses of action in each case. You are not to assume anything. If the data provided is not adequate to decide the given course of action, your answer will be 'data inadequate'. All the candidates given below fulfil the criteria for age.

Give answer

(a) Selected for interview
(b) Not to be selected
(c) Data inadequate
(d) Refer to the Chief Manager (CR)
(e) Refer to the DGM (CR)

***Ex* 1** Rohan is the son of a marketing executive, Rohan has obtained money as prizes in inter college/university debates and drama events. He has worked as marketing executive for 5 yr after completing his B.Sc. and MBA with 62% and 70% marks, respectively. He is ready to give security deposit of ₹ 10000. He has obtained 65% marks in written exam.

***Ex* 2** Kanchan has 6 yr of experience in marketing consumer products. She has completed her B.Sc., M.Sc. and MBA with 65%, 56% and 62% marks, respectively. She is ready to pay the security deposit. She participated at debating competitions and has won many prizes in inter college/university events. She is interested in social work.

***Ex* 3** Dinkar has won many prizes in sports at inter college/university level. He has 7 yr of experience in direct sales. He has scored 65%, 56% and 53% marks in written exam, B.Sc. and M.Sc., respectively. He is ready to deposit security deposit and desires to make a career in selling.

***Ex* 4** Kurpa is a successful sports person and has won several prizes in sports and debating at inter college level onwards. In B.Sc., M.Sc. and written exam, she has obtained 62%, 55% and 65% marks, respectively. She has 5 yr experience in sales. Her father is a successful businessman.

***Ex* 5** Jadunath is a Science graduate having done post-graduate diploma in Journalism. He is having 4 yr experience of marketing consumer products. He is ready to deposit ₹ 10000 as security deposit. He had been participating in dramas at inter college level and above and has won many prizes. He has secured 55% and 65% marks at written exam and B.Sc., respectively.

***Ex* 6** Chandrakant is a 30 yr old officer, who has worked as sales representative for 5 yr. He is a keen sportsman and actor and has won many prizes in college/ university level events. He is ready to pay security deposit of ₹ 10000. He has obtained 67%, 58% and 55% marks at B.Sc., written exam and diploma in business management, respectively.

***Ex* 7** Deepali is a 26 yr old girl having obtained 60% marks in post-graduate, 53% and 64% at B.Sc. and written exam, respectively. Deepali has worked as sales executive for $3\frac{1}{2}$ yr. She has obtained many prizes in inter college events in debating and is ready to deposit ₹ 10000 as security deposit.

Solutions (Example Nos. 1-7) *First of all, let us understand the contents of the questions*

- **Basic conditions** A, B, C, D and E
- **Additional conditions** (i) and (ii)
- **Bio data** Personal details given in each example from (Example Nos. 1-7) such details include

Name	Date of birth	Educational qualifications
Professional qualifications	Percentage of marks	Work experience
Extra curricular activities	Hobbies and interest	Some other details

To solve these questions, we have to follow a step by step approach. Steps involved in the process are as follows

***Step* I** Read carefully the basic conditions A, B, C, D and E.

***Step* II** Read carefully the additional conditions (i) and (ii) and find out with which basic conditions (A, B, C, D or E), these additional conditions (i) and (ii) are attached.

- We find that additional condition (i) is attached with basic condition D.
- Additional condition (ii) is attached with basic condition A.

There is no any other additional condition. It means apart from A and D, other basic conditions (B, C and E) are independent.

***Step* III** Make table for the questions as given below

Ex. Nos.	Candidate	A (ii)	B	C	D (i)	E	Answers
1.	Rohan						
2.	Kanchan						
3.	Dinkar						
4.	Kurpa						
5.	Jadunath						
6.	Chandrakant						
7.	Deepali						

➘ Additional condition (ii) is attached with basic condition A, hence in the table it is put with A as A (ii).
Additional condition (i) is attached with basic condition D,hence in the table it is put with D as D (i).

***Step* IV** Read information about each candidate and then put following symbols in the table made in step III.

✓ For basic condition fulfilled.
✗ For unfulfilled basic condition.
(✓) For basic condition unfulfilled but additional condition attached to the basic condition is fulfilled.
(✗) For the violation of both basic and additional condition.
— / ? For data inadequate.

➘ (×) can also be written as ×.

Now, let us fill the table

Q. Nos.	Candidates	A (ii)	B	C	D (i)	E	Answers
1.	Rohan	✓	✓	✓	✓	✓	a
2.	Kanchan	✓	✓	✓	?	✓	c
3.	Dinkar	✓	✓	✓	✓	✓	a
4.	Kurpa	✓	✓	✓	✓	?	c
5.	Jadunath	✓	✓	✓	(✓)	✓	d
6.	Chandrakant	✓	✓	✓	(✓)	✓	d
7.	Deepali	(✓)	✓	✗			b

Condition A (ii) Deepali does not fulfil basic condition A. Further (ii) is the additional condition attached to A. According to additional Condition (ii), a person must be a post-graduate in Science (M.Sc.) with 50%, if he/she does not fulfil basic condition A. In case of Deepali, the stream of her post-graduation is not given. Hence, we cannot be sure about her post-graduation in Science. She may or may not be a Science post-graduate. Thus, in case of Deepali we put the symbol of data inadequate (?). All other fulfil basic condition A. Therefore, symbol '✓' was put for them.

Condition B This condition is fulfilled by all candidates, hence '✓' is put for them.

Condition C Except Deepali, this condition is fulfilled by all as Deepali has participated in **inter college debate**. But condition C demands **inter college onwards participation**. Therefore, for Deepali symbol '✗' is put for all others symbol '✓' is put.

Remember, **Deepali** does not fulfil basic condition C. Further, basic condition C is not attached with any additional condition. Hence, putting '✗' for Deepali means, **declaring her disqualified** for required post. Therefore, for **Deepali**, **we will stop our work here**. It means condition D and E will not be checked for her because we have reached our answer for Deepali as option (b) not to be selected.

Now, the question arises, what would have been our answer for Deepali, if the situation had been as follows

A (ii)	B	C	D (i)	E
?	✓	✓	✓	✓

Obviously, for the above situation our answer would have been option (c) *i.e.*, data inadequate.

Condition D (i) Rohan, Dinkar and Kurpa fulfil basic condition D. Hence, '✓' is put for them.

Jadunath and Chandrakant violate basic condition D but fulfil additional condition (i) attached to D. Hence, (✓) is put for them.

Biodata of **Kanchan** does not give any information about **her percentage of marks in written examination**. Hence, we are not sure about her fulfilling of condition D. As we lack definite information in case of Kanchan, we put '?' for her.

Condition E Rohan, Kanchan, Dinkar, Jadunath and Chandrakant fulfil basic condition E. Hence, '✓' is put for them.

In case of Kurpa, there is no information about security deposit. Hence '?' is put for him.

Now, we have our table ready to answer the given question. Let us answer the questions as follows.

1. (*a*) **Rohan** All basic conditions are fulfilled. Hence, he will be selected.
2. (*c*) **Kanchan** Except condition D, all basic conditions are fulfilled. But there is no information about his percentage of marks in the written exam. It means data is inadequate.
3. (*a*) **Dinkar** All basic conditions are fulfilled. Hence, he will be selected.
4. (*c*) **Kurpa** All basic conditions, except E are fulfilled. There is no information about deposit of security money. It means data is inadequate in this case.
5. (*d*) **Jadunath** Basic conditions A, B, C and E are fulfilled. Further, basic condition D is not fulfilled. But additional condition (i) attached with D is fulfilled. Therefore, case will be referred to Chief Manager (CR).
6. (*d*) **Chandrakant** Basic conditions A, B, C and E are fulfilled. Further, basic condition D is violated. But additional condition (i) attached with D is fulfilled. Therefore, case will be referred to Chief Manager (CR).
7. (*b*) **Deepali** Basic condition C is violated. Hence, she will be rejected.

K Memory *Add-ons*

Rule I For selection all basic conditions must be fulfilled.

Rule II For rejection atleast one independent basic condition must be violated/basic '+' additional condition must be violated.

Rule III If a basic condition is violated but an additional condition attached with it is fulfilled and all other remaining basic conditions are fulfilled, then the case will be referred to the person given in the question.

Rule IV Once the symbol ✗ / (✗) is put in the table, there is no need to check further conditions as person is declared rejected at this stage only.

Rule V If for one basic condition, the data is not given while all other basic conditions are fulfilled, it means data is inadequate.

Rule VI If any information is not given and answer choices don't have data inadequate option, then condition related to that particular information is supposed to be violated.

Directions (Example Nos. 8-14) A chemical company X decided to recruit management trainees for its ammonia plant. The company laid down the following criteria for selecting the candidates.

A. should be a chemical engineering graduate with minimum 65% marks.
B. should have done atleast a diploma in business management.
C. should not be less than 21 yr of age and more than 28 yr of age as on 1st July, 2005.
D. should have secured a minimum of 75% marks in the Common Entrance Test (CET).

However, if the candidate fulfils all the criteria except

(i) A above but has secured marks above 60% and below 65% and also has a working experience of one year, his case may be referred to the Managing Director (MD).
(ii) B above and has secured more than 80% marks in CET, his case may be referred to the General Manager (GM) of the plant.
(iii) D above but has passed the CET examination with atleast 65% marks and has secured more than 70% marks in chemical engineering degree examination, his case may be referred to the Vice-President.

Based on the above criteria and information given in each of the following questions, you have to take a decision regarding to each case. You cannot assume anything. These cases are given to you as on 1st July, 2005.

Give answer

(a) if the candidate is to be selected
(b) if the candidate is to be referred to the Managing Director
(c) if the candidate is to be referred to General Manger of the plant
(d) if the candidate is to be referred to the Vice-President
(e) if the candidate is not to be selected

Ex **8** Subhash Chandra, who is working in a chemical factory as junior engineer (chemicals), since 30th June, 2004, is a chemical engineering graduate with 72% marks. He has passed CET with 85% marks. His date of birth is 23rd December, 1983.

Ex **9** Arundhati, a 27 yr old lady, is chemical engineer with 61% marks and has also done as diploma course in the information technology. She has been working in a private company as manager, software science for past 3 yr. She has obtained a post-graduate degree in business management. She has secured 75% marks in CET.

Ex **10** Shirish Gupta has completed his graduation in chemical engineering with 75% marks and diploma in business management with 60% marks. He has passed the CET with 69% marks. He celebrated his 27th birthday on 17th March, 2005.

Ex **11** Dilip Khare is an engineering graduate passed out in 2002, with 70% marks. He has secured 68% marks in CET. His date of birth is 25th October, 1982. He has completed his post-graduate diploma in business management from a reputed institute.

Ex **12** Rajiv Mhatre is a 25 yr old chemical engineering graduate with 62% marks in graduation. He is working in a private chemical company as an assistant manager for last 2 yr. He has passed CET with 52% marks and has done diploma in business management in 2001.

Ex **13** Mamta is an electrical engineer with 74% marks. She has done diploma in business management as well as in chemical technology securing 66% and 62% marks, respectively. Her date of birth is 16th December, 1979. She has passed CET with 80% marks.

Ex **14** Subodh Roy is studying for post-graduate degree in chemical engineering at present. He has secured 73% marks in BE chemical engineering. His date of birth is 25th June, 1984. He has also completed the diploma in business management and has passed CET with 82% marks. He has no working experience.

Solutions (Example Nos. 8-14) *The given information can be tabulated as follows*

Example Nos.	Candidates	A (i)	B (ii)	C	D (iii)	Answers
8.	Subhash	✓	(✓)	✓	✓	c
9.	Arundhati	(✓)	✓	✓	✓	b
10.	Shirish	✗	✓	✓	(✓)	d
11.	Dilip	✗	—	—	—	e
12.	Rajiv	(✓)	✓	✓	✗	e
13.	Mamta	✗	—	—	—	e
14.	Subodh	✓	✓	✓	✓	a

Dilip It is given that Dilip is an engineering graduate with 70% marks. On the basis of this information we cannot be sure that he is a chemical engineering graduate or not. It means, we should put the symbol of data inadequate '?' for condition A. But point to be noted that in the answer option, data inadequate has not been given. Further additional condition (i) attached with A is also not fulfilled, if we suppose A is violated. Hence, we put (✗) for A(i).

Subhash There is no information about the basic condition B. Hence, according to general rule we should put the symbol of data inadequate '?' for condition B but point to be noted that in the answer option data inadequate has not been given. In this situation we suppose, for Subhash basic condition B is violated. When we suppose B is violated, then we go on to check additional condition ii attached with B. Here, we find that additional condition ii attached with B is fulfilled. Hence, we put (✓) for B(ii).

For Dilip and Mamta, Rule IV is applied

For Rajiv, Rule II is applied.

For Subhash, Arundhati and Shirish, Rule III is applied.

For Subodh, Rule I is applied.

Practice Corner **17.1**

Build your Confidence...

Directions (Q. Nos. 1-5) Study the following information carefully and answer the questions given below. **[IBPS (PO) 2012]**

Following are the conditions for selecting Manager-HR in an organisation

(i) be atleast 30 yr and not more than 35 yr as on 1st March, 2012.
(ii) have secured atleast 60% marks in graduation in any discipline.
(iii) have secured atleast 65% marks in the post-graduate degree/diploma in personnel management/ HR.
(iv) have post qualification work experience of atleast five years in the personnel/ HR department of an organisation.
(v) have secured atleast 50 % marks in the selection process.

However, in the case of a candidate who satisfies all the above conditions except

(a) (ii) above but has secured atleast 55% marks in graduation in any discipline and atleast 70% marks in post-graduate, degree/diploma in personnel management/HR, the case is to be referred to GM-HR.
(b) (iv) above but has post qualification work experience of atleast four years out of which atleast two years as deputy manager-HR, the case is to be referred to President-HR.

In each question below are given details of one candidate. You have to take one of the following courses of actions based on the information provided and the conditions and subconditions given above and mark the number of that course of action as your answer. You are not to assume anything other than the information provided in each question. All these cases are given to you as on 1st March, 2012.

Give answer

(a) if the candidate is not to be selected
(b) if the data provided are not adequate to take a decision
(c) if the case is to be referred to President-HR
(d) if the case is to be referred to GM-HR
(e) if the candidate is to be selected

1. Rita Bhatt was born on 25th July, 1978. She has secured 62% marks in graduation and 65% marks in post-graduate diploma in management. She has been working for the past 6 yr in the personnel department of an organisation after completing her post-graduation. She has secured 55% marks in the selection process.

2. Ashok Pradhan was born on 8th August, 1980. He has been working in the personnel department of an organisation for the past 4 yr after completing his post-graduate degree in personnel management with 67%. Out of his entire experience, he has been working for the past 2 yr as deputy Manager-HR. He has secured 62% marks in graduation and 58% marks in the selection process.

3. Alok Verma was born on 4th March, 1976. He has been working in the personnel department of an organisation for the past 6 yr after completing his post-graduate diploma in personnel management with 66% marks. He has secured 57% marks in the selection process and 63% marks in graduation.

4. Swapan Ghosh has been working in the personnel department of an organisation for the past 5 yr after completing his post-graduate degree in HR with 72% marks. He has secured 56% marks in graduation. He was born on 12th May, 1977. He has secured 58% marks in the selection process.

5. Seema Behl has been working in the personnel department of an organisation for the past 7 yr after completing her post-graduate diploma in personnel management with 70% marks. She was born on 5th July, 1979. She has secured 65% marks in graduation and 50 % marks in the selection process.

Directions (Q. Nos. 6-10) Read the following informations carefully and answer the question given below it.

Following are the criteria for selection of interpreter in different embassies in India.

A. The candidate should be a graduate from a recognised university.
B. He or she should be 23 to 26 yr of age as on 7th March, 2006.
C. The candidate should have the ability to read, write and speak English and Hindi besides the foreign language to which he/she has applied.
D. The candidate should have his/her own accommodation, either rental or own, in Delhi.
However, if a candidate fulfils all criteria except.
(i) at D but he/she has accommodation either rental or own, in NCT Delhi, his/her case is to be referred to foreign secretary.
(ii) at B but he/she has a PG degree in any discipline, his/her case is to be referred to personal assistant, foreign secretary.

Now, based on the above criteria and the information given below, you have to take decision in regard to each case. You are not to assume any information which is not available.

Give answer

(a) if to be referred to foreign secretary
(b) if to be referred to PA foreign secretary
(c) if data is inadequate
(d) if to be selected
(e) if not to be selected

6. Sweta Singh is a Hindi Hons. graduate from Hindu College, Delhi. Recently, she has celebrated her 23rd birthday on 9th January, 2006. She possesses her own house in Vikaspuri, Delhi. She can speak, write and read English, Hindi and French equally well.

7. Miss Anu knows how to speak, write and read Hindi, English and Portuguese. She also knows how to handle computers. She has done GNIIT after doing her graduation from a recognised university. She can arrange a house in Delhi for her accommodation.

8. Pinki has done her graduation from Oxford University. Her date of birth is 9th November, 1979. She knows how to speak, write and read Hindi, English and Spanish. Her grandfather owns a house in Ghaziabad, in NCT, Delhi. She can live with her grandfather during her job in Delhi.

9. Kiran, wife of Ajay and a graduate from a recognised university, lives with her husband at Kamla Nagar in North. Delhi in their rental house. She has passed her post-graduation in History in February, 2003 at the age of 23 yr. She can speak, read and write Maithili, Hindi, English and Nepali. There languages Nepali, Maithili and Bhojpuri are being spoken in Nepal.

10. Reena has done her graduation from Jabalpur University, Madhya Pradesh. She can arrange her accommodation with her brother-in-law in Delhi. Her date of birth is 12th January, 1983. She can speak more than two languages including a foreign language.

Directions (Q. Nos. 11-15) Study the following information carefully and answer the questions given below.

Following are the conditions for selection Senior. Manager-General Banking in bank.

The candidate must

(i) have secured atleast 60% marks in Std XII.
(ii) have secured atleast 55% marks in graduation in any discipline.
(iii) have secured atleast 60% marks in post-graduate degree/diploma in Management/ Economics/Statistics.
(iv) be atleast 25 yr and not more than 35 yr as on 1st March, 2010.
(v) have post qualification work experience of atleast 2 yr as general banking officer in a bank.
(vi) have secured atleast 50% marks in the written examination.
(vii) have secured atleast 40% marks in the personal interview.

In the case of candidate, who satisfies all the above conditions except

(a) at (iii) above but has secured atleast 60% marks in CA or ICWA, the case is to be referred to VP-Recruitment.
(b) at (vii) above but has secured atleast 60% marks in the written examination and atleast 35% marks in the personal interview, the case is to be referred to President-Recruitment.

In each question below are given details of one candidate. You have to take one of the following courses of action based on the information provided and the conditions and subconditions given above and mark the number of that courses of action as your answer. You are not to assume anything other than the information provided in each question. All these cases are given to you as on 1st March, 2010.

Give answer

(a) if the data provided are inadequate to take a decision
(b) if the case is to be referred to VP-Recruitment
(c) if the case is to be referred to President-Recruitment
(d) if the candidate is to be selected
(e) if the candidate is not to be selected

11. Kesav Vora was born on 8th November, 1978. He has secured 65% marks in Std XII and 60% marks in graduation. He has secured 58% marks in MA Economics and 60% marks in ICWA. He has been working in a bank as a generalist officer for the past 2 yr after completing his education. He has also secured 50% marks in the written examination and 45% marks in the personal interview.

12. Arindam Ghosh has been working in a bank as a generalist officer for the past 4 yr after completing his post-graduate diploma in management with 60% marks. He has secured 50% marks in the written examination and 40% marks in the personal interview. He has also secured 70% marks in Std XII. He was born on 25th February, 1975.

13. Sohan Majhi has secured 65% marks in B.Sc. and 70% marks in M.Sc. Statistics. He has been working in bank as a generalist officer for the past 3 yr after completing his post-graduation. He has secured 55% marks in the written examination and 50% marks in the personal interview. He was born on 8th July, 1982.

14. Neha Salve has been working in bank as a generalist officer for the past 4 yr after completing her post-graduate degree in Economics with 60% marks. She has secured 60% marks in both graduation and Std XII. She was born on 24th August, 1979. She has secured 70% marks in the written examination and 38% marks in the personal interview.

15. Neeta Jaiswal was born on 2nd June, 1980. She has been working in bank as a generalist officer for the past 3 yr after completing her post-graduate degree in Economics with 60% marks. She has secured 68% marks in HSC and 58% marks in B.Com. She has also secured 50% marks in both the written examination and personal interview.

Directions (Q. Nos. 16-25) Read the following information carefully and then answer the questions given below it.

Following are the conditions for selecting a 'research officer' for a reputed research institution.

The candidate must

A. be a post-graduate with minimum 60% marks.
B. have Ph.D. degree.
C. have research experience of atleast 3 yr.
D. have fluency in Hindi and English.
E. have published atleat 5 research papers.
F. not be less than 25 yr and more than 35 yr as on 1st July, 1993.
G. have diploma in Statistical Applications.

In the case of a candidate who

(i) satisfies all other criteria except A above but has post-graduate degree with more than 55% marks, his case will be referred to the director of the institute.
(ii) satisfies all other criteria except C above will be referred to the join director.

Now, read the information provided in the case of the candidates in each of the questions given below and decide on the basis of the information provided and above conditions, which of the following courses of action is to be taken.

Give answer

(a) if candidate is to be referred to the director
(b) if the data provided are inadequate to decide the courses of action
(c) if the candidate is to be selected
(d) if the candidate is to be referred to the joint director
(e) if the candidate is not to be selected

16. 28 yr old Sudhir has obtained his Ph.D. degree and is a post-graduate with 70% marks. He has diploma in Statistical Applications and research experience of 2 yr. He has got published 5 research papers and is fluent in English and Hindi.

17. 27 yr old Rajesh is a post-graduate with 61% marks and has obtained Ph.D. degree. He is fluent in Hindi and English. He has got 5 research papers published and has research experience of 4 yr. He has completed diploma in Statistical Applications.

18. 32 yr old Vishal has obtained Ph.D. degree and diploma in Statistical Applications. He obtained 53% marks in post-graduation. He has research experience of 4 yr and has got published 6 research papers. He is fluent in English and Hindi.

19. Rahul is a post-graduate with 65% marks and has obtained Ph.D. degree. He is fluent in Hindi and English. He was born on 1st June, 1968. He has research experience of 4 yr and has published 6 research papers.

20. Anubhav is post-graduate with 62% marks. He has obtained Ph.D. degree and has published 5 research papers. He has research experience of $3\frac{1}{2}$ yr and fluent in Hindi and English. He has completed diploma in Statistical Applications. His date of birth is 1st September, 1968.

21. Sunder has obtained Ph.D. degree and diploma in Statistical Applications. He has 65% marks in post-graduation. He has research experience of 4 yr and has 6 research papers published. He is fluent in Hindi and English. His date of birth is 29th September, 1958.

22. Vasudha is post-graduate with 63% marks and has obtained Ph.D. degree and diploma in Statistical Applications. She is fluent in Hindi and English. She has research experience of $2\frac{1}{2}$ yr and has got 7 research papers published.

23. Radhey Raman is a post-graduate with 67% marks. He has obtained Ph.D. degree and diploma in Statistical Applications. He has research experience of 4 yr and has got 7 research papers published.

24. Chandrashekhar is post-graduate with 56% marks and has obtained Ph.D. degree. He is fluent in Hindi and English. He got 5 research papers published and has research experience of 4 yr. His date of birth is 1st September, 1958. He has obtained diploma in Statistical Applications.

25. 34 yr old Kumar is a post-graduate with 64% marks. He has obtained Ph.D. degree and diploma in Statistical Applications. He has research experience of 5 yr and has got 7 research papers published.

Directions (Q. Nos. 26-32) Study the following information carefully and answer the questions given below.
[UCO Bank (PO) 2010]

Following are the condition for selecting marketing manager in an organisation.

The candidate must

(i) be a graduate in any discipline with atleast 55% marks.
(ii) have a post-graduate degree/diploma in marketing management with atleast 60% marks.
(iii) have post qualification work experience of atleast five years in the marketing division of an organisation.
(iv) have secured atleast 45% marks in the selection examination.
(v) have secured atleast 40% marks in the selection interview. In the case of a candidate, who satisfies all the conditions except
(a) at (iii) above but has post qualification work experience of atleast three years as deputy marketing manager, the case is to be referred to GM-Marketing.
(b) at (v) above, but has secured atleast 60% marks in the selection examination, the case is to be referred to VP-Marketing.

In each question below, details of one candidate are given. You have to take one of the following courses of action based on the information provided and the conditions and subconditions given above and mark the number of that courses of action as your answer. You are not to assume anything other than the information provided in each question. All these cases are given to you as on 01st May, 2010.

Give answer

(a) if the candidate is to be selected
(b) if the candidate is not to be selected
(c) if the case is to be referred to GM-Marketing
(d) if the case is to be referred to VP-Marketing
(e) if the data provided are not adequate to take a decisions

26. Nidhi Agarwal has secured 60% marks in the selection interview and 40% marks in selection examination. She has been working in the marketing division of an organisation for the past 8 yr after completing her post-graduate degree in the marketing management with 65% marks. She has secured 59% marks is B.Sc.

27. Navin Desai has secured 56% marks in BA. He has been working in the marketing division of an organisation for the past 7 yr after completing his post-graduate degree in marketing with 62% marks. He has secured 62% marks in the selection examination and 38% marks in the selection interview.

28. Sabina Handa has been working for the past 4 yr as deputy marketing manager in an organisation after completing her post-graduate diploma in marketing management with 65% marks. She has secured 45% marks in both selection examination and selection interview. She has also secured 58% marks in B.Com.

29. Manoj Malhotra has secured 65% marks in B.Sc. and 60% marks in post-graduate degree in marketing management. He has also secured 50% marks in both selection examination and selection interview. He has been working in the marketing division of an organisation for the past 6 yr after completing his post-graduation in marketing.

30. Varsha Akolkar has secured 59% marks in BA. She has secured 42% marks in the selection interview and 48% marks in the selection examination. She has been working in the marketing division of an organisation for the past 7 yr after completing her post-graduation in marketing management with 57% marks.

31. Utpal Goswami has been working in the marketing division of an organisation for the past 5 yr after completing his post-graduate diploma in marketing management with 65% marks. he is a first class Science graduate with 60% marks. He has secured 45% marks in the selection examination and 40% marks in the selection interview.

32. Anindita Ghosh has been working for the past 8 yr in an organisation after completing her post-graduate degree in marketing management with 70% marks. She has secured 56% marks in BA. She has also secured 50% marks in the selection examination and 45% marks in the selection interview.

Directions (Q. Nos. 33-38) Study the following information carefully and answer the questions given below.

[Allahabad Bank (PO) 2009]

Following are the conditions for selecting manager finance in an organisation.

(i) be atleast 30 yr and not more than 35 yr as on 1st November, 2009.
(ii) be a graduate in any discipline with atleast 55% marks.
(iii) be a post-graduate degree/diploma holder in management with finance specialisation with atleast 60% marks.
(iv) have post qualification work experience of atleast six years in the finance department of an organisation.
(v) have secured atleast 50% marks in the preliminary interview.
(vi) have secured atleast 40% marks in the final interview.

In the case of a candidate who satisfies all the above conditions except

(a) at (iv) above but has post qualification work experience of atleast three years as deputy finance manager in an organisation, his/her case is to be referred to VP-Finance.
(b) at (vi) above but has obtained atleast 60% marks in the preliminary interview, his/her candidature is to be considered under 'wait list'.

In each question below, details of one candidate are given. You have to take one of the following courses of action bases on the information provided and the conditions and subconditions given above and mark the number of that course of action as your answer. You are not to assume anything other than the information provided in each question. All these cases are given to you as on 1st November 2009.

Give answer

(a) if the candidate is to be selected
(b) if the candidate is not to be selected
(c) if the candidate is to be kept on waiting list
(d) if the case is to be referred to VP-Finance
(e) if the data provided are not adequate to take a decision

33. Neelam Johri has secured 38% marks in the final interview. She has also secured 65% marks in both B.Com. and post-graduate degree in finance management. She has been working in the finance department of an organisation for the past 6 yr after completing her post-graduate degree. She was born on 16th August, 1978. She has secured 63% marks in the preliminary interview.

34. Anirban Chaudhary was born on 8th March, 1978. He has secured 65% marks in B.Sc. and 62% marks in post-graduate degree in finance management. He has been working in the finance department of a company for the past 7 yr after completing his post graduation. He has secured 50% marks in the final interview and 40% marks in the preliminary interview.

35. Vaibhav Joshi has secured 60% marks in both graduation and post-graduate diploma in finance management. He has been working as deputy finance manager in an organisation for the past four year after completing his post-graduate diploma. He has secured 53% marks in the preliminary interview and 43% marks in the final interview. He was born on 3rd July, 1977.

36. Sudha Motwani was born on 24th March, 1977. She has secured 58% marks in BA and 68% marks in post-graduate diploma in finance management. She has been working in the finance department of an organisation for the past 8 yr after completing her post-graduation. She has secured 50% marks in both preliminary and final interviews.

37. Ashok Chandra has been working in the finance department of an organisation for the past 7 yr after completing his post-graduate diploma in management with finance specialisation with 65% marks. He has secured 55% marks in the preliminary interview and 45% marks in the final interview. He was born on 12th April, 1976.

38. Suparna Desai has secured 58% marks in graduation and 68% marks in post-graduate diploma in finance management. She has been working as deputy finance manager in an organisation for the past 4 yr after completing her post-graduate diploma. She has secured 50% marks in preliminary interview and 45% marks in the final interview. She was born on 26th August, 1977.

Directions (Q. Nos. 39-47) Study the following information carefully to answer these questions.

Following are the conditions stipulated by XYZ Company for recruitment of trainees engineers.

The candidate must

A. be an engineering graduate with atleast 60% marks.
B. be not less than 21 yr and to more than 25 yr of age as on 1st May, 2006.
C. have passes the selection test with atleast 55% marks.
D. be willing to pay a deposit of ₹ 50000 to be refunded on completion of training.

However, if a candidate fulfils all the above mentioned criteria except

(i) at (a) above but has appeared to the last semester examination and has obtained an aggregate of minimum 65% marks in first seven semesters, his/her case may be referred to VP of the company.
(ii) at (d) above but in willing to pay an amount atleast ₹ 25000 and has obtained atleast 70% marks at engineering degree; the case may be referred to the general manager of the company.

In each of the following questions, details of one candidate are given as regards his/her candidature. You have to read the information provided and decide his/her status bases on the conditions given above and the information provided. You are not to assume anything other than the informations provided in each of the following questions. All these cases are given to you as on 1st May, 2006.

Give answer

(a) if the candidate is to be selected
(b) if the case is to be referred to the general manager
(c) if the case is to be referred to the VP
(d) if the data provided is not adequate to take a decision
(e) if the candidate is not to be selected

39. Sachin, who has just completed 23 yr of age passed out degree in civil engineering with 70% marks. He has cleared the selection test with 61% marks. He is willing to pay the amount of ₹ 25000 only and will not be able to pay ₹ 50000.

40. Anjali is an IT engineer passed out in 2003 with 52% marks. After getting the engineering degree she has done MBA with specialisation in finance. She has cleared the selection test with 60% mark. She can pay the deposit of ₹ 50000. Her date of birth is 15th September, 1982.

41. Mohan Rao is an electronics engineer (BE electronics) and passed out in 2004 with 66% marks. He has passed the selection test with 59% marks and is willing to pay the required amount of deposit.

42. K Shiv Kumar is a student of B.Tech. in mechanical engineering and has appeared for the last semester examination. Results of the last semester examinations are expected in June 2006. He is expecting to score 65% marks in the last semester as his aggregate percentage of the first seven semester is 67%. He has passed the selection test with 60% marks and has no problem in paying the amount of ₹ 50000 as deposit. He is 22 yr old at present.

43. Rajeev Andhare has appeared for the last semester of engineering degree examination and is hoping to score atleast 70% marks. His aggregate score upto seventh semester is 72%. He has just completed 21 yr of age. He has scored 63% marks in the selection test and is ready to pay an amount of ₹ 50000 as deposit.

44. Nachiket is an engineering graduate with 75% marks at degree level. His date of birth is 16th April, 1982. He has obtained 66% marks in the selection test and is ready to pay 50% of the required amount of deposit at the time of selection and the remaining amount subsequently.

45. Nikita has passes out chemical engineering degree in June 2005 with 74% marks. She appeared for the selection test which she cleared with 72% marks. Her date of birth is 26th August, 1983. She is not in a position to pay ₹ 50000 but will arrange to pay ₹ 30000 as deposit.

46. Vinod has passed computer engineering degree examination with 68% marks in 2005 at the age of 22 yr and is working with a private engineering firm since last six months. He has cleared the selection test with 63% marks. He will manage to pay ₹ 50000 as deposit.

47. Aniket has appeared for the last semester examination of diploma in mechanical engineering and the results are awaited. He secured first class in each of the first 3 semesters. He has recently completed 22 yr of age. He has no problem in paying the required amount of ₹ 50000 as deposit. He has passes the selection test with 58% marks.

Response & Interpretations **(17.1)**

Solutions (Q. Nos. 1-5)

Q. Nos.	Candidates	(i)	(ii) (a)	(iii)	(iv) (b)	(v)	Answers
1.	Rita	✓	✓	?	✓	✓	b
2.	Ashok	✓	✓	✓	✓	✓	c
3.	Alok	✗	—	—	—	—	a
4.	Swapan	✓	✓	✓	✓	✓	d
5.	Seema	✓	✓	✓	✓	✓	e

1. (*b*) **2.** (*c*) **3.** (*a*) **4.** (*d*) **5.** (*e*)

Solutions (Q. Nos. 6-10)

Q. Nos.	Candidates	(A)	B (ii)	(C)	D (i)	Answers
6.	Sweta	✓	✓	✓	✓	d
7.	Miss Anu	✓	?	✓	✓	c
8.	Pinki	✓	✗	—	—	e
9.	Kiran	✓	✓	✓	✓	b
10.	Reena	✓	✓	?	✓	c

6. (*d*) **7.** (*c*) **8.** (*e*) **9.** (*b*) **10.** (*c*)

Solutions (Q. Nos. 11-15)

Q. Nos.	Candidates	(i)	(ii)	iii (a)	(iv)	(v)	(vi)	vii (b)	Answers
11.	Kesav	✓	✓	(✓)	✓	✓	✓	✓	b
12.	Arindam	✓	?	✓	✗	✓	✓	✓	e
13.	Sohan	?	✓	✓	✓	✓	✓	✓	a
14.	Neha	✓	✓	✓	✓	✓	✓	(✓)	c
15.	Neeta	✓	✓	✓	✓	✓	✓	✓	d

11. (*b*) **12.** (*e*) **13.** (*a*) **14.** (*c*) **15.** (*d*)

Solutions (Q. Nos. 16-25)

Q. Nos.	Candidates	A (i)	B	C (ii)	D	E	F	G	Answers
16.	Sudhir	✓	✓	(✓)	✓	✓	✓	✓	d
17.	Rajesh	✓	✓	✓	✓	✓	✓	✓	c
18.	Vishal	(✗)	—	—	—	—	—	—	e
19.	Rahul	✓	✓	✓	✓	✓	✓	?	b
20.	Anubhav	✓	✓	✓	✓	✓	✗	—	e
21.	Sunder	✓	✓	✓	✓	✓	✓	✓	c
22.	Vasudha	✓	✓	?	✓	✓	?	✓	b
23.	Radhey	✓	✓	✓	?	✓	?	✓	b
24.	Chandrashekhar	(✓)	✓	✓	✓	✓	✓	✓	a
25.	Kumar	✓	✓	✓	?	✓	✓	✓	b

16. (*d*) **17.** (*c*) **18.** (*e*) **19.** (*b*) **20.** (*e*) **21.** (*c*)

22. (*b*) **23.** (*b*) **24.** (*a*) **25.** (*b*)

Solutions (Q. Nos. 26-32)

Q. Nos.	Candidates	(i)	(ii)	iii (a)	(iv)	v (b)	Answers
26.	Nidhi	✓	✓	✓	✗		b
27.	Navin	✓	✓	✓	✓	(✓)	d
28.	Sabina	✓	✓	(✓)	✓	✓	c
29.	Manoj	✓	✓	✓	✓	✓	a
30.	Varsha	✓	✗	—	—	—	b
31.	Utpal	✓	✓	✓	✓	✓	a
32.	Anindita	✓	✓	?	✓	✓	e

26. (*b*) **27.** (*d*) **28.** (*c*) **29.** (*a*) **30.** (*b*) **31.** (*a*) **32.** (*e*)

Solutions (Q. Nos. 33-38)

Q. Nos.	Candidates	(i)	(ii)	(iii)	(iv) (a)	(v)	(vi) (b)	Answers
33.	Neelam	✓	✓	✓	✓	✓	(✓)	c
34.	Anirban	✓	✓	✓	✓	✗		b
35.	Vaibhav	✓	✓	✓	✓	✓	✓	d
36.	Sudha	✓	✓	✓	✓	✓	✓	a
37.	Ashok	✓	?	✓	✓	✓	✓	e
38.	Suparna	✓	✓	✓	(✓)	✓	✓	d

33. (*c*) **34.** (*b*) **35.** (*d*) **36.** (*a*) **37.** (*e*) **38.** (*d*)

Solutions (Q. Nos. 39-47)

Q. Nos.	Candidates	A (i)	B	C	D (ii)	Answers
39.	Sachin	✓	✓	✓	(✓)	b
40.	Anjali	✗	—	—	—	e
41.	Mohan	✓	?	✓	✓	d
42.	K Shiv Kumar	✓	✓	✓	✓	c
43.	Rajeev	✓	✓	✓	✓	c
44.	Nachiket	✓	✓	✓	✓	b
45.	Nikita	✓	✓	✓	✓	b

39. (*b*) **40.** (*e*) **41.** (*d*) **42.** (*c*) **43.** (*c*) **44.** (*b*)
45.(*b*) **46.** (*a*) **47.** (*e*)

Type 2 Passage Based Decision Making

In such type of questions, generally a paragraph or a group of statements is given followed by some question and a candidate is required to read the data carefully and decide accordingly that which option follows from the data.

Directions (Example Nos. 15-18) On the basis of the information given in the following case, answer the questions that follow. **[XAT 2012]**

Tina, a blast furnace expert, who works as a technology trouble shooter stays in Jamshedpur. She has got an important assignment in Delhi, which requires six hours to complete. The work is so critical that she has to start working the moment she reaches the client's premises.

She is considering various options for her onward and return journey between Jamshedpur to Delhi.

A quick search revealed that ticket from Jamshedpur to Delhi is available in two trains. Trains 12801 and 12443 depart from Jamshedpur station at 06 : 45 h and 15 : 55 h and reach Delhi next day at 04 : 50 h and 10 : 35 h, respectively. Trains 12444 and 12802 start from Delhi at 17 : 20 h and 22 : 20 h and reach Jamshedpur next day at 10 : 35 h and 20 : 05 h, respectively.

Another option is to reach Ranchi by a three hour road trip and take a flight to Delhi from Ranchi. The distance between Ranchi and Delhi is covered in 105 min both ways by any of the scheduled flights. Air India operates two flights, AI 9810 and AI 810, which depart Ranchi at 8 : 00 h and 15 : 25 h respectively. Flight number IT-3348 operated by Kingfisher Airlines departs Ranchi at 19 : 20 h. Return flights operated by Air India, AI 9809 and AI 809, depart Delhi at 5 : 50 h and 11 : 00 h respectively. Flight number IT-3347 operated by Kingfisher Airlines departs Delhi at 17 : 10 h.

From Tina's home, Jamshedpur railway station is five minutes drive and her destination at Delhi is 90 min and 30 min, drive from airport and railway station, respectively. One has to reach the airport atleast one hour before the scheduled departure to complete the boarding procedure. At every railway station she loses five minutes in navigating through the crowd.

Ex **15** If Tina wants to minimize the total time out of Jamshedpur, the best option for her. From the options given below, is

(a) AI 9810 and return by IT 3347
(b) AI 9810 and return by train number 12802
(c) IT 3348 and return by AI 9809
(d) train number 12443 and return by train number 12444
(e) AI 9810 and return by train number 12444

Sol. (*a*) Here, first calculate the time taken for each journey and tabulate it to help calculate the requisite values.

The timings from Jamshedpur to Delhi and from Delhi to Jamshedpur are

Jamshedpur to Delhi				
Train			**Time**	
12801	6:45	4 : 50	22 h 5 min	1325 min
12443	15:55	10 : 35	18 h 40 min	1120 min
Road			**Time**	
Jamshedpur to Ranchi by car			3 h	180 min
Delhi airport to site			1.5 h	90 min
Delhi railway to site			0.5 h	30 min
Flight			**Time**	
AI 9810	8:00	9:45	1 h 45 min	105 min
AI 810	15:25	17:10	1 h 45 min	105 min
IT 3348	19:20	21:05	1 h 45 min	105 min

Delhi to Jamshedpur				
Train	**Time**			
12802	22:20	20:05	21 h 45 min	1305 min
12444	17:20	10:35	17 h 15 min	1035 min
Road			**Time**	
Ranchi to Jamshedpur by car			3 h	180 min
Site to Delhi airport			1.5 h	90 min
Site to Delhi railway			0.5 h	30 min
Flight	**Time**			
AI 9809	5:50	7:35	1 h 45 min	105 min
AI 809	11:00	12:45	1 h 45 min	105 min
IT 3347	17:10	18:55	1 h 45 min	105 min

Also, the waiting time at the airport, navigation time at the railway station and work duration are

Waiting	Airport	1 h	60 min
Navigation	Railway		5 min

Work Duration	6 h	360 min

Now, keep in mind that each flight (in either direction) takes 105 min.

So, the time taken from Tina's house to the work site will always remain constant.

This will be Jamshedpur to Ranchi by car + Waiting time at airport + Flight time + airport to work site

$$= 180 + 60 + 105 + 90 = 435 \text{ min } \textit{i.e.}, 7 \text{ h and } 15 \text{ min}$$

This will stay constant while returning from the work site to Jamshedpur as well.

Similarly, the time from Tina's house to the Jamshedpur railway station (excluding train time) will be always be 10 min (5 for travel and 5 for navigation). This will remain uniform even when she return back from Jamshedpur railway station to her house.

Also, the time from Delhi railway station to the work site will always be 35 min (30 for travel and 5 for navigation). Again, this will remain constant even when she comes back from the work site to Delhi railway station.

Finally, work time will always be regular at 360 min

Also, total time = Travelling time + Work time + Waiting time

Now, let us consider each option one by one.

Option (a)

Since, she travels by flight in both cases, total travelling time = 435 × 2 = 870 min

Work time = 360 min

Now, if she goes by AI 9810, she arrives at the site 90 min after 9 : 45 i.e., at 11 : 15 am and completes the work at 17 : 15. Because IT-3347 departs at 17 : 10 h, she will have to wait till 14 : 40 h on the next day i.e., wait time of 1285 min.

So, total time = 870 + 360 + 1285 = 2515 min

Option (b)

She goes by flight and returns by train

Travel time = Flight time + Time from work site to Delhi railway station + Actual train travel + Time from Jamshedpur railway station to home = 435 + 35 + 1305 + 10 = 1785 min

Work time = 360 min

Now, if she goes by AI 9810, she arrives at the site 90 min after 9 : 45 i.e., at 11:15 am and completes the work at 17 : 15 h. Because train 12802 departs at 22 : 20 h, she will have to wait till 21 : 45 h on the same day *i.e.*, wait time of 270 min.

So, total time = 1785 + 360 + 270 = 2415 min

Hence, option (b) can be eliminated.

Option (c)

Again, because she travels by flight both ways, travel time = 870 min

Work time = 360 min

Now, if she goes by IT-3348, she arrives at the site 90 min after 21 : 05 i.e., at 22 : 35 h and completes the work at 04 : 35 h. Because AI 9809 departs at 05 : 50 h, she will have to wait till 03 : 20 h on the next day i.e., wait time of 1365 min

So, total time = 870 + 360 + 1365 = 2595 min

Hence, option (c) can be eliminated.

Option (d)

She travels both ways by train. So, the travelling hours between her house and Jamshedpur railway station will be counted twice and the journey between the workplace and Delhi railway station will be counted twice. Also, the actual train time will be counted once each for the two journeys.

Travel time = (10 × 2) + (35 × 2) + 1120 + 1035 = 2245 min

Work time = 360 min

Now, consider that work time and travel time together are 2245 + 360 = 2605 min which is greater than the least time obtained for option (b). So, there is no point in calculating the waiting time which will only enlarge this value.

Hence, option (d) can be eliminated.

Option (e)

She goes by flight and comes back by train.

Travel time = Flight time + Time from work site to Delhi railway station + Actual train travel + Time from Jamshedpur railway station to home = 435 + 35 + 1035 + 10 = 1515 min

Work time = 360 min

Now, if she goes by AI-9810, she gets to the site 90 min after 9 : 45 i.e., at 11 : 15 am and finishes the work at 17 : 15h. Because train 12444 departs at 17 : 20 h, she will have to wait till 16 : 45 h on the next day i.e., wait time of 1405 min.

So, total time = 1515 + 360 + 1405 = 3280 min

Hence, option (e) can be eliminated.

Ex 16 **Tina gets a message that her work has to be completed between 9 : 00 h and 17 : 00 h. If she wants minimize the total time out of Jamshedpur, the best option, from the options given below, for her among the following is to go by**

(a) train 12443 and returns by train 12444
(b) train 12801 and return by train 12802
(c) AI 9810 and return by AI 9809
(d) AI 810 and return by AI 9809
(e) IT 3348 and return by IT 3347

Sol. (*e*) Note that in this question, the work needs to be completed any time between 9 : 00 h and 17 : 00 h. It does not mean that the work has to be commenced and completed between the 9 : 00 h and 17 : 00 h.

Now, let us consider each option one-by-one.

Option (a)

Since, there are 2 train journeys.

Travel time = (2 × 10) + (2 × 35) + Actual travel time in 12443 + Actual travel time in 12444 = 20 + 70 + 1120 + 1035 = 2245 min

Work time = 360 min

If she goes by train 12443, she will arrive at the work site at 11 : 10 h and finish the work at 17 : 10 h which does not follow the condition of the question.

So, she will have to wait till 03 : 00 h on the next day to begin the work so that she can complete the work at 09 : 00 h. This is a stay of 950 min.

Once she completes the work at 09 : 00 h, she will have to wait till 16 : 45 h on that day to catch train 12444. This is a waiting time of 465 min.

Total waiting time = 950 + 465 = 1415 min So, total time = 2245 + 360 + 1415 = 4020 min

Hence, option (a) can be rejected.

Option (b)

Since, there are 2 train journeys,

Travel time = (2 × 10) + (2 × 35) + Actual travel time in 12801 + Actual travel time in 12802
= 20 + 70 + 1325 + 1305 = 2720 min

Work time = 360 min

If she goes by train 12801, she will reach the work site at 05 : 25 h, start immediately and finish the work at 11 : 25 h which meets the condition of the question.

Once she completes the work at 11 : 25 h, she will have to wait till 21 : 45 h on that day to catch train 12802. This is a waiting time of 620 min. So, total time = 2720 + 360 + 620 = 3700 min

Hence, option (b) can be rejected.

Option (c)

Since, there are 2 flight journeys.

Travel time = 435 × 2 = 870 min

Work time = 360 min

If she goes by Air India 9810, she will reach the work site at 11 : 15 h and finish the work at 17 : 15 h which breaks the condition of the question.

So, she will have to wait till 03 : 00 h on the next day to start the work so that she can complete the work at 09 : 00 h. This is a wait of 945 min.

Once she completes the work at 09 : 00 h, she will have to wait till 03 : 20 h on the next day to catch AI 9809. This is a waiting time of 1100 min.

Total waiting time = 945 + 1100 = 2045 min

So, total time = 870 + 360 + 2045 = 3275 min

Hence, option (c) can be rejected.

Option (d)

Since, there are 2 flight journeys.

Travel time = 435 × 2 = 870 min

Work time = 360 min

If she goes by AI 810, she will arrive at the work site at 18 : 40 h and complete the work at 00 : 40 h which violates the condition of the question.

So, she will have to wait till 03 : 00 h on the next day to begin the work so that she can complete the work at 09 : 00 h. This is a wait of 500 min.

Once she complete the work at 09 : 00 h, she will have to wait till 03 : 20 h on the next day to catch AI 9809. This is a waiting time of 1100 min.

Total waiting time = 500 + 1100 = 1600 min

So, total time = 870 + 360 + 1600 = 2830 min

Hence, option (d) can be rejected.

Option (e)

Since, there are 2 flight journeys.

Travel time = 435 × 2 = 870 min

Work Time = 360 min

If she goes by IT 3348, she will get to the work site at 22 : 35 h and finish the work at 04 : 35 h which breaks the condition of the question.

So, she will have to wait till 03 : 00 h on the next day to start the work so that she can complete the work at 09 : 00 h. This is a wait of 265 min.

Once she completes the work at 09 : 00 h, she will have to wait till 14 : 40 h on the same day to catch IT-3347. This is a waiting time of 340 min.

Total waiting time = 265 + 340 = 605 min

So, total time = 870 + 360 + 605 = 1835 min

***Ex* 17** **Tina has to appear for an exam on 8th of January in Jamshedpur and she can start from her residence in Jamshedpur only after 16 : 00 h of the same day. Choose the option, from the options given below, that will help her to minimize the total time out of Jamshedpur.**

(a) go by train 12443 and return by train 12444
(b) go by train 12443 and return by AI 9809
(c) go by IT 3348 and return by train 12801
(d) go by AI 810 and return by train 12801
(e) go by AI 9810 and return by AI 9809

Sol. (e) Tina cannot leave before 16:00 h on 8th January. So, if any of the travel modes necessitate departure before 16:00 h, she will have to begin the journey on 9th January. However, consider that the 'time out of Jamshedpur' is to be minimized. So, the time that she spends in Jamshedpur till her departure on 9th January cannot be considered 'waiting time'.

Now, let us consider each option one-by-one.

Option (a)

Since, there are 2 train journeys.

Travel time = (2 × 10) + (2 × 35) + Actual travel time in 12443 + Actual travel time in 12444

= 20 + 70 + 1120 + 1035 = 2245 min

Work time = 360 min

If she goes by train 12443, she will leave on 9th January, reach the work site at 11 : 10 h on 10th and finish the work at 17 : 10 h. Because train 12444 departs at 17 : 20 h, she will miss it and will have to catch it on 11th January. It means a waiting time till 16 : 45 h of 11th January *i.e.*, 1415 min.

So, total time = 2245 + 360 + 1415 = 4020 min

Hence, option (a) can be rejected.

Option (b)

She goes by train and comes back by flight.

Travel time = Time from home to Jamshedpur station + Actual time in train travel + Time from Delhi railway station to work site + Flight time = 10 + 1120 + 35 + 435 = 1600 min

Work time = 360 min

If she goes by train 12443, she will leave on 9th January, reach the work site at 11 : 10 h on 10th and finish the work at 17 : 10 h. Flight AI 9809 departs at 05 : 50 h on 11th January. So, she will have to wait till 03 : 20 h of 11th January *i.e.*, a waiting time of 610 min.

So, total time = 1600 + 360 + 610 = 2570 min

Hence, option (a) can be rejected.

➘ Observe that options (c) and (d) can straightaway be rejected as they mention a return journey by train 12801, which is not feasible as that train travels from Jamshedpur to Delhi and not the other way round.

Hence, options (c) and (d) can be rejected.

Option (e)

She travels both ways by flight.

Travel time = 435 × 2 = 870 min

Work time = 360 min

If she goes by AI 9810, she departs on 9th January, arrives the work site at 11 : 15 h on 9th and complete the work at 17 : 15 h. Flight AI 9809 departs at 05 : 50 h on 10th January. So, she will have to wait till 03 : 20 h of 10th January *i.e.*, a waiting time of 605 min.

So, total time = 870 + 360 + 605 = 1835 min

Hence, option (e) can be rejected.

***Ex* 18** **If Tina decides to minimize the in between waiting period, the option that she should choose from the options given below will be**

(a) go by train 12801 and return by IT 3347

(b) go by train 12443 and return by train 12802

(c) go by AI 9810 and return by train 12802

(d) go by AI 810 and return by AI 9809

(e) go by IT 3348 and return by AI 809

Sol. (*a*) In this case, we are not interested in the travel time and work time at all, as the aim is to minimize the waiting time. The waiting time of one hour at the airport is to be considered but the navigation time of 5 min at the railway station is not to be considered.

Also, the waiting time will be nothing but the variance between completion of work and time at which she needs to leave from the work site. We need to add 0, 60 or 120 min to this (depending on how many times she travels by flight).

Now, let us consider each option one by one.

Option (a)

Since, she travels by flight once, 60 min will be added to the waiting time.

If she goes by train 12801, she will complete the work by 11:25 h. To catch flight IT-3347 which leaves at 17:10 h, she needs to leave at 14:40 h *i.e.*, a wait time of 195 min.

So, total wait time = 195 + 60 = 255 min

Hence, option (a) can be rejected.

Option (b)

Since, she travels by train twice, 0 min will be added to the waiting time.

If she goes by train 12443, she will finish the work by 17 : 10 h. To catch train 12802 which departs at 22 : 20 h, she needs to leave at 21 : 45 h *i.e.*, a wait time of 275 min.

So, total wait time = 275 min

Hence, option (b) can be rejected.

Option (c)

Since, she travels by flight once, 60 min will be added to the waiting time.

If she goes by flight AI 9810, she will complete the work by 17 : 15 h. To catch train 12802 which departs at 22 : 20 h, she needs to leave at 21 : 45 h. *i.e.*, a wait time of 270 min.

So, total wait time = 270 + 60 = 330 min

Hence, option (c) can be rejected.

Option (d)

Since, she travels by flight twice, 120 min will be added to the waiting time.

If she goes by flight AI 810, she will complete the work by 00 : 40 h. To catch flight AI 9809 which leaves at 05 : 50 h, she needs to leave at 03 : 20 h *i.e.*, a wait time of 160 min.

So, total wait time = 160 + 120 = 280 min

Hence, option (d) can be rejected.

Option (e)

Since, she travels by flight twice, 120 min will be added to the waiting time.

If she goes by flight IT-3348, she will complete the work by 04 : 35 h. To catch flight AI 809 which departs at 11 : 00 h, she needs to leave at 08 : 30 h *i.e.*, a wait time of 235 min.

So, total wait time = 235 + 120 = 355 min

Hence, option (e) can be eliminated.

Practice Corner **17.2**

Build your Confidence...

Directions (Q. Nos. 1-5) Read the following caselet carefully and answer the questions that follow. **[XAT 2013]**

Head of a nation in the Nordic region was struggling with the slowing economy on one hand and restless citizens on the other. In addition, his opponents were doing everything possible to discredit his Government. As a famous saying goes, 'There is no smoke without a fire', it cannot be said that the incumbent Government was doing all the right things. There were reports of acts of omission and commission coming out every other day. Distribution of public resources for private businesses and for private consumption had created a lot of problems for the Government. It was being alleged that the Government has given the right to exploit these public resources at throw away prices to some private companies. Some of the citizens were questioning the Government policies in the Supreme Court of the country as well as in the media. In the midst of all this, the head of the nation called his cabinet colleagues for a meeting on the recent happenings in the country.

He asked his minister of water resources about the bidding process for allocation of rights to set up mini hydel power plants. To this, the minister replied that his ministry had followed the laid out policies of the Government. Water resources were allocated to those private companies that bid the highest and were technically competent. The minister continued that later on some new companies had shown interest and they were allowed to enter the sector as per the guidelines of the Government. This the minister added, would facilitate proper utilisation of water resources and provide better services to the citizens. The new companies were allocated the rights at the price set by the highest bidders in the previous round of bidding. After hearing this, the head of the nation replied that one would expect the later allocations to be done after a fresh round of bidding. The minister of water resources replied that his ministry had taken permissions from the concerned ministries before allocating the resources to the new companies.

1. Media reports suggested that the minister of water resources had deliberately allocated the water resources at old prices to the new companies and in return some received kickbacks. However, the minister denied these charges. His counter argument was that he followed the stated policies of the Government and it is very difficult to price a scarce resource. He also said that the loss that the media is talking about is national and in reality the Government and the citizens have gained by the entry of new players.

Which of the following is the most appropriate inference?

(a) If benefit to the citizens is higher than national losses, then it is not unethical
(b) If benefit to the citizens is lower than national losses, then it is unethical
(c) If benefit to the citizens is higher than actual losses, then it is not unethical
(d) If benefit to the citizens is lower than actual losses, then it is unethical
(e) All of the above are inappropriate

2. Subsequently, the minister questioned the role of the media in the whole affair. He said that the media cannot act like a reporter, prosecutor and judge at the same time. Mr Swamy, an independent observer, was asked about appropriateness of the minister's opinion. What should be Mr Swamy's reply?

(a) Media has been rightly accused by the minister
(b) Minister's statement may be factually incorrect
(c) Media has rightly accused the minister
(d) Media has wrongly accused the minister
(e) None of the above

3. Looking at the public unrest and discontent, the Government's anti-corruption branch was entrusted with the task of investigating the matter. Within a week's time the branch charge sheeted top corporate managers and the minister for wrong doings. Mr Swamy was again asked to identify the guilty. Who should Mr Swamy pick?

(a) Only corporate managers
(b) Only the minister
(c) Only the head of the nation
(d) All of the above
(e) None of the above

4. Over the last five year, Bank of Bharat has seen the number of its retail customer accounts drop by over 40%. Over the same period, the share price of Bank of Bharat has increased by more than 80%. This amazed a few investors, who believe that a bank's share price should drop, if its number of customers drops.

Which of the following, if true over the last five year, best accounts for the observed movement in the price of Bank of Bharat's equity shares?

(a) Two year ago, Securities and Exchange Board started an investigation on the bank for accounting irregularities but last year the company was cleared of all charges
(b) The bank recently implemented a highly publicised programme for free home loans
(c) The bank has been switching its customer base from retail customers to commercial customers, which now accounts for over 75% of the bank's revenues
(d) There have been many new banks, which have entered retail banking business over the last five years
(e) The bank is known to be the best paymaster in the industry

5. Gastric bypass surgery has been shown to be effective at helping extremely obese people lose weight. Some patients have lost as much as 300 pounds after undergoing the surgery, thereby substantially prolonging their lives. Despite the success of the treatment, most doctors have not embraced the surgery.

Which of the following statements, if true, best accounts for the lukewarm reaction of the medical community to gastric bypass surgery?

(a) Gastric bypass surgery carries a high risk of serious complications, including death
(b) Obesity is one of the leading contributors to heart disease and hypertension two leading causes of death
(c) Incidences of obesity among the Indian urban middle class population have been increasing consistently for the last three decades
(d) Many patients report that losing weight through diets is ineffective, since they usually gain the weight back within six months
(e) Most health insurance plans will cover the cost of gastric bypass surgery for morbidly obese patients at high risk of heart disease

Directions (Q. Nos. 6-9) Read the following caselet carefully and answer the questions that follow. **[XAT 2013]**

The Big and colourful company

You are running 'Big and Colourful (B and C)' company that sells books to customers through three retail formats.

(i) You can buy books from bookstores.
(ii) You can buy books from supermarket.
(iii) You can order books over the internet (online).

Your manager has an interesting way of classifying expenses. Some of the expenses are classified in terms of size; big, small and medium and others are classified in terms of the colours, red, yellow, green and violet. The company has a history of categorising overall costs into initial costs and additional costs. Additional costs are equal to the sum of big, small and medium expenses. There are two types of margins, contribution (sales minus initial costs) and profit (contribution minus additional costs). Given below is the data about sales and costs of B & C.

Sales		60000
Initial costs		39000
Contribution (sales-initial costs)		21000
Additional costs		
Big	9300	
Small	3000	
Medium	3500	15800
Profit (Contribution-additional cost)		5200

Each of the big, small and medium cost is categorised by the manager into red, yellow, green and violet costs. Breakdown of the additional costs under these headings is shown in the table below.

Expenses	Total	Red	Yellow	Green	Violet
Big	9300	5100	1200	1400	1600
Small	3000		400	2000	600
Medium	3500	400	1500	1400	200
Total	15800	5500	3100	4800	2400

Red, yellow, green and violet costs are allocated to different retail formats. These costs are apportioned in the ratio of number of units consumed by each retail format. The number of units consumed by each retail format is given in the table below

Retail format	Red	Yellow	Green	Violet
Online	200	50	50	50
Super market	65	20	21	21
Book store	10	30	9	9
Total	275	100	80	80

6. Read the following statements

Statements I. Online store accounted for 50% of the sales at B and C and the ratio of super market sales and book store sales is 12.

II. Initial cost is allocated in the ratio of sales.

If you want to calculate the profit/loss from the different retail formats, then

(a) Statement I alone is sufficient to calculate the profit/loss
(b) Statement II alone is sufficient to calculate the profit/loss
(c) Both Statements I and II are required to calculate the profit/loss
(d) Either of the two statements is sufficient to calculate the profit/loss
(e) Neither Statement I nor Statement II is sufficient to calculate the profit/loss

7. What is the profit/loss from 'online' sales?

(a) 0 (b) – 310 (c) 20 (d) 450
(e) Cannot be determined

8. Which retail format is least profit making for B and C?

(a) Online
(b) Super market
(c) Book store
(d) All formats are loss making
(e) All formats are profit making

9. Which retail format gives the highest profit for B and C?

(a) Book store
(b) Super market
(c) Online
(d) All are equally profitable
(e) Cannot be determined

Directions (Q. Nos. 10-13) Read the following caselet carefully and answer the questions that follow. **[XAT 2013]**

A teacher wanted to administer a multiple choice (each question having six choices) based quiz of high difficulty level to a class of sixty students. The quiz had sixty questions. The probability of selecting the correct answer for a good student and a brilliant student was 0.2 and 0.25, respectively. The poor students had no learning advantage. The teacher did not want students to cheat but does not have time and resources to monitor. All students were seated serially in 10 rows and 6 columns.

10. Is it possible for the teacher to detect cheating without monitoring? Choose the statement that best describes your opinion.

(a) It is not at all possible, teacher will have to introduce technology, if there is no human support
(b) It is always possible but teacher has to calculate the exact answer
(c) It is possible when many students sitting next to each other have the same incorrect answers for multiple questions. However, there can be a small error in judgment
(d) It is possible when many student sitting next to each other have the same correct answers for multiple questions. However, there can be a small error in judgement
(e) It is possible only for poor students but not for good and brilliant students. However, there can be a small error in judgement

11. Three good students were seated next to each other. What is the probability of them having the same incorrect choice for four consecutive questions?

(a) 256/390625 (b) 256/3125 (c) 4/3125 (d) 1/3125
(e) Cannot be determined

12. Students from four sections of a class accompanied by respective class teachers planned to go for a field trip. There were nineteen people in all. However, on the scheduled day one of the four teachers and a few students could not join the rest. Given, below are some statements about the group of people who ultimately left for the trip.

I. Section A had the largest contingent.
II. Section B had fewer students than section A.
III. Section C's contingent was smaller than section B.
IV. Section D had the smallest contingent.
V. The product of the number of student from each section is a multiple of 10.
VI. The number of students from section C is more than 2.
VII. The product of the number of students from each section is a multiple of 24.
VIII. The largest contingent has more than 4 students.
IX. Each section contributed different number of students.

The statements that taken together can give us the exact number of students from each section

(a) I, II, III, IV, VI (b) I, VI, VIII, IX
(c) I, II, III, IV, V, VI (d) I, II, III, IV, VI, VII
(e) I, IV, VI, VII, IX

13. There is a lot of interest in the first five ranks for Class XI students. One student guessed the rank order as Ankita, Bhagyashree, Chanchal, Devroopa and Esha. Later upon announcement of the results, it was found that not only did he get each student out off her true position, none of the students in his ranking correctly followed her immediate predecessor. Another student guessed Devroopa, Ankita, Esha, Chanchal and Bhagyashree. Even his guess was wrong. It was found that he had got two positions correct and two students in his ranking correctly followed their immediate predecessors.

Which of the following is true about the correct rank order?

(a) Ankita got the third position
(b) Bhagyashree got the fourth position
(c) Chanchal got the second position
(d) Devroopa stood first

Directions (Q. Nos. 14-15) Read the following caselet carefully and answer the questions that follow. **[XAT 2013]**

Island of Growth was witnessing a rapid increase in GDP. Its citizens had become wealthier in recent times and there had been a considerable improvement in the standards of living. However, this rapid growth had increased corruption and nepotism in the Island. In the recent times, a fear had gripped the population that corruption would destroy the inclusive nature of the society and hinder economic progress. However, most citizens had kept quiet because

(i) they had benefitted from the corruption indirectly, if not directly
(ii) they did not have the time and energy to protest
(iii) they did not have courage to rise against the established power centres

There was a need to remove corruption but no one was willing to stick his neck out. Many politicians, bureaucrats and private organisations were corrupt. Media and intellectuals kept quiet, as they benefitted indirectly from corruption. The common man was scared of state's retribution and the youngsters feared insecure future.

Against this background, an old, unmarried and illiterate gentleman of high moral and ethical authority, Shambhu, decided to take on the issue of corruption. He sat on a hunger strike in the heart of the capital city of the Island. Shambhu demanded that the Government should constitute new laws to punish the corrupt across all walks of life. Media and the citizens of the Island gave massive support to Shambhu. Buckling under the pressure, the Government promised to accept Shambhu's demands. He ended the hunger strike immediately following the Government's announcement. Shambhu became the darling of the media. He used this opportunity as a platform to spread the message that only citizens with an unblemished character should be allowed to hold a public office. A few months later, it was found that the Government had not fulfilled any of its promises made to Shambhu. Infuriated, he was thinking of launching another Island-wide protest. However, this time, he sensed that not many people and media persons were willing to support him.

14. Read the following statements

I. People's latent anger against corruption.
II. Shambhu's moral courage.
III. Hungry media looking to raise issues.
IV. Rising income level.

In your opinion, which combination of the above statements is the most unlikely reason for Shambhu's initial success?

(a) I, II and IV
(b) III and IV
(c) I and III
(d) I, III and IV
(e) All of these

15. Which of the following could be the most likely reason for decline in public support for Shambhu?

(a) The common man had become sick and tired of Government's inaction against rising corruption
(b) Shambhu was old and he lacked the energy to garner the same support that he enjoyed from the media and the public in the initial stages
(c) The general public may have realised that Shambhu was focusing too much on 'indirect involvement' in past incidences of corruption. Common men found it difficult to live up to the high standards set by Shambhu
(d) Shambhu's colleagues were misleading him
(e) Shambhu came from a village, while most of his supporters were city dwellers

Directions (Q. Nos. 16-18) Read the following caselet carefully and answer the questions that follow.

Marathe is a Vice-President in a construction equipment company in the city of Mumbai. One day, his subordinate Bhonsle requested that Kale, a project manager, be transferred to the Chennai office from the Mumbai office. In Chennai, Kale would work alone as a researcher. Bhonsle gave the following reasons for his request "Kale is known to frequently fight with his colleagues. 'Kale is conscientious and dedicated only when working alone. He is friendly with seniors but refuses to work with colleagues, in a team. He cannot accept criticism and feels hostile and rejected. He is over bearing and is generally a bad influence on the team.'

Marathe called upon Gore, another project manager and sought further information on Kale. Gore recalled that a former colleague, Lakhote (who was also Kale's former boss) had made a few remarks on his appraisal report about Kale. In his opinion, Kale was not fit for further promotion as he was emotionally unstable to work in groups though he had seven years of work experience. Lakhote had described Kale as too authoritative to work under anyone. Lakhote had further told Gore that Kale had an ailing wife and an old mother, who does not want to stay with his wife.

16. Consider the following solutions to the problem mentioned above

I. Marathe should transfer Kale to Chennai office.
II. Marathe should try and verify the facts from other sources as well.
III. Kale should be sacked.
IV. Kale should be demoted.
V. Marathe should suggest Kale to visit a family counselor.

Which of the following would be the most appropriate sequence of decisions in terms of immediacy starting from immediate to a longer term solution?

(a) II, I and V
(b) I, IV and II
(c) II, III and IV
(d) II, V and I
(e) II, V and IV

17. Marathe sought an appointment with Lakhote to find out ways to help Kale. Lakhote is of the opinion that the company's responsibility is restricted to the workplace and it should not try to address the personal problems of employees. If Marathe has to agree to Lakhote's opinion, *Which of the solutions presented in the previous question would be weakened?*

(a) Only I
(b) Only II
(c) Only III
(d) Only IV
(e) Only V

18. Which of the following statements, if true would weaken the decision to sack Kale the most?

(a) A Government of India study established that employees with 5-10 yr of work experience tend to have conflicting responsibilities at home and office. However, these conflicts wither away after 10 yr of experience
(b) Another article published in the magazine, Xaviers Quarterly, highlighted that employees' problems at home affect their performance at work
(c) In the latest issue of a reputed journal, Xaviers Business Review, it was published that most top managers, find it difficult to work in a group
(d) It was published in Xaviers Management Review (another reputed journal) that individuals who cannot work in terms find it difficult to adjust to a new location
(e) Bhonsle was of the opinion that emotionally unstable persons, find it difficult to get back to normal working life

Directions (Q. Nos. 19-21) Read the following caselet carefully and answer the questions that follow. [XAT 2013]

It was the end of performance review cycle for the year 2012, when you asked your subordinates about any problems they were facing. Natrajan told you that an important member of his team, Vardarajan, who had also won the best performance award for the year 2011, was not taking interest in work. Despite Natrajan's counseling, no change was noticed in Vardarajan, rather his attitude deteriorated. You had also received such information from other employees. You had not interfered hoping that Natrajan, an experienced hand, would be able to solve the problem. But, now that Natrajan himself brought this to your notice, you decided to call Vardarajan and counsel him.

19. Which of the following could be the most unlikely reason for Vardarajan's declining involvement in the workplace?

(a) Vardarajan does not find the work challenging enough as he has already achieved the best performance award
(b) Others in the organisation have been trying to pull him down, since he was declared best performer
(c) Vardarajan was not promoted after his superlative performance, while another colleague, Sundararajan, was promoted although he was not as good a performer as Vardarajan
(d) After putting in lots of effort for the superlative performance, Vardarajan felt burnt out
(e) Vardarajan was appreciated by his bosses for his achievement last year

20. Vardarajan did not find his work challenging enough, given below are some steps that could be taken to motivate him.

I. Give Vardarajan a more challenging assignment.
II. Transfer Vardarajan from projects department to training department.
III. Ask him to take a vacation for two months
IV. Send him for further training on decision making under stress.

Which of the following combinations would be the most appropriate?

(a) I, II and III
(b) I, III and IV
(c) I and IV
(d) II, III and IV
(e) I, II, III and IV

21. You overheard a conversation between Vardarajan and his colleague over an official dinner. He expressed his unhappiness about the fact that good performers were not given their due credit while poor performers were promoted faster. If Vardarajan is right, which of the following steps would help in creating a better organisation?

(a) Promote Vardarajan with immediate effect
(b) Ensure that performance is objectively and transparently assessed
(c) Give another assignment to Vardarajan
(d) Give higher salary to Vardarajan
(e) Fire Vardarajan

Directions (Q. Nos. 22-25) Read the following caselet carefully and answer the questions that follow. [XAT 2013]

Professor Vijya, the chairperson of the Faculty Academic Committee (FAC), was trying to understand the implications of decisions taken by the Student Placement Committee (SPC) on placement issues.

It was alleged that Biswajit, a final year student, inflated his grades in his biodata that was sent to the recruiters. The President of SPC requested the FAC to debar Biswajit from the campus recruitment process. When the matter was brought up for discussion in FAC, one of the professors remarked that Biswajit too should be allowed to defend himself. When Biswajit arrived for the meeting the situation became even more challenging. Biswajit raised the issue that many other students who had misrepresented grades to get coveted jobs had gone scot-free. He alleged that these students were close to the President of SPC and therefore no action was taken against them. He stated that somebody has deliberately manipulated his grades in the biodata. This allegation confused the members and it was decided to adjourn the meeting. Vijya was to decide on the next course of action.

22. If you were Vijya, what in your opinion would be the most appropriate action?

(a) Debar Biswajit and the President of SPC from the placement process as they have failed to uphold the rules of the SPC
(b) Suspend Biswajit and the President of SPC
(c) Constitute a fact finding committee to investigate the matter and ask them to submit a report to you within a week's time
(d) Apprise the corporate recruiters of the situation and assure them that corrective actions will be taken
(e) Both (c) and (d)

23. It was found that a large section of the students have been indulging in such practices. Unfortunately, the HR Manager of a much coveted campus recruiter, who is an alumnus of the college came to know about this. Considering yourself in the position of that HR Manager. What would be your reaction?

(a) Express your displeasure and stop any further recruitment from the college
(b) Talk to your contact in the college and try to find out the truth
(c) Do not change anything and continue the process as, if nothing has happened
(d) Ask the college to send a fresh set of bio data as you wanted verified grades of the students
(e) Ask the SPC to resend the details of the short listed students including their verified grades

24. As a potential entrant you are having an informal facebook chat with one of the college seniors. You wanted to know about the pay packages of the graduating students. The senior replied that one will be able to understand this only after joining the college. He did not reveal any information but suggested that it is not very difficult to get a high salary job as you have already started networking. He also cautioned that you should not believe any rumors and you should directly contact the student body for any further information. What will be your most appropriate choice for seeking further information about placements?

(a) This conversation will increase your interest and you will network more with the students of the college for increasing your chances of getting a high salary job
(b) You will contact the college authorities to get more insights about the placement process
(c) You will start networking with the HR Managers to understand their requirements
(d) You will try to contact the President of SPC.
(e) You will contact your other facebook friends to find out about the placement activities at the college

25. Vijya found that there were many such cases of grade inflation. She was giving final touches to the report when her attention was diverted by a phone call on her personal cell phone. It was from an unlisted number. The caller conveyed to her that it will be in her interest as well as in the interest of the college, if the report is not presented to the director. The caller also told her these findings will change nothing only result in bad publicity for the college. The caller identified himself as a well-wisher of the college before hanging up. Consider yourself in Vijya's position and choose an appropriate decision from the following choices.

(a) Disregard the phone call and do not share its details with others
(b) Understand the implications of the phone call and apply for a leave
(c) Call up the director, tell him about the phone call and excuse yourself from the responsibility
(d) Talk to the director and seek his opinion
(e) Constitute a different committee to investigate the 'phone call' and carry on with normal activities

Directions (Q. Nos. 26-29) Read the following caselet carefully and answer the questions that follow. [XAT 2014]

Krishna Reddy was the head of a pharmaceutical company that was trying to develop a new product. Reddy, along with his friend Prabhakar Rao, assessed that such products had mixed success, Reddy and Rao realised that if a new product (a drug) was a success/it may result in sales of 100 crore but if it is unsuccessful, the sales may be only 20 crore. They further assessed that a new drug was likely. to be successful 50% of times. Cost of launching the new drug was likely to be 50 crore. Now, Reddy and Rao were in a quandary whether the company should go ahead and market the drug. They contacted Raj Adduri, a common. friend for advice. Adduri was of the opinion that given the risky nature of launch, it may be a better idea to test the market. Rao and Reddy realised test marketing would cost 10 crore. Adduri told them the previous test meeting results have been unfavorable 70% of times and success rate of products favorably tested was 80%. Further, when test marketing results were unfavorable; the products have been successful 30% of the times.

26. How much profit can the company expect to earn, if it, launches the new drug (suppose there are no additional (costs)?

(a) 12 crore (b) 10 crore (c) 10.5 crore (d) 11crore
(e) 11.5 crore

27. How much profit can the company expect to make, if the product is launched after favourable test marketing results (assume there are no additional costs)?

(a) 11.5 crore (b) 10 crore
(c) 8.5 crore (d) 13.8 crore
(e) 24 crore

28. What is the probability of product failure, if Reddy and Rao decides to test market?

(a) 0.21 (b) 0.35
(c) 0.14 (d) 0.28
(e) Cannot be computed

29. If Rao and Reddy decides to launch the product despite unfavorable test marketing, how much profit/loss can the company expect to earn?

(a) 13.2crore profit (b) 36.8 crore profit (c) 46.8 crore loss (d) 16 crore loss
(e) 10 crore loss

Directions (Q. Nos. 30-32) Read the following caselet carefully and answer the questions that follow. [XAT 2014]

Ms Banerjee, class teacher for 12th standard, wants to send teams (based on past performance) of three students each to District, State, National and International competition in Mathematics. Till now, every student of the class has appeared in 100 school level tests. The students had following distribution of of marks in the tests, in terms of 'average' and 'number of times a student scored cent per cent marks'.

Student	Average	Number of times a student scores cent-per cent
1	70	7
2	60	15
3	65	8
4	70	1
5	65	6
6	65	10
7	65	4
8	60	12
9	65	3
10	60	8
11	70	1
12	65	6
13	70	2
14	60	20
15	65	5

Ms Baherjee has carefully studied chances of her school winning each of the competitions. Based on in depth calculations, she realised that her school is quite likely to win district level competition but has low chances of winning the international competition. She listed down the following probabilities of wins for different competitions, Prize was highest for international competition and lowest for district level, competition (in that order).

Competition	District	State	National	International
Probability of win	0.95	0.6	0.1	0.05

All the students are studying in the school for last 12 yr. She wanted to select the best team for all four competitions (Ms Banerjee had no other information to select students).

30. Which of three members should form the team for the international competition?

(a) 4, 11, 14 (b) 2, 8, 14
(c) 1, 6, 1.2 (d) 13, 14, 15
(e) 1, 3, 4

31. Which of the following members should constitute the team for the district level competition?

(a) 4, 11, 14 (b) 1, 4, 11
(c) 4,5, 6 (d) 4, 11, 13
(e) Any team can win the competition

32. Ms Banerjee has to select the team for national competition after she has selected the team for international competition. A student selected for international competition can not be a part of national competition.

Which is the best team for the national competition?

(a) 1, 7, 4
(b) 8, 9, 10
(c) 2, 8, 14
(d) 3, 6, 1
(e) Any of remaining students, as it would not matter

Directions (Q. Nos. 33-36) Read the following caselet carefully and answer the questions that follow. [XAT 2014]

33. The main issues of interpretation arising from the work of professionally trained anthropologists are that they are late in colonial/post-colonial trajectories, because professional training shapes their interpretations. However, within field of interest and training, their works are most thorough and systematic. The best, conclusion drawn from the above paragraph is analogous to

(a) Heisenberg uncertainty principle, which states that speed and position cannot be determined simultaneously
(b) cultural relativism, which states that two or more than two cultures cannot be compared
(c) personal relativism, which states that one should not study anthropological phenomenon for personal gains
(d) conclusive relativism, which states that anthropologists should not **knowingly colour their findings**
(e) communicative relativism, which states that Anthropologists should not be selective in communicating their findings

34. Consider merit pay for. teachers. Schools face constant pressure to change their management approaches to improve performance, which is usually assessed by standardised reading, Maths and Science scores. In most schools, teachers' pay is determined by seniority, years of total teaching experience and credentials. Pay is rarely based on performance, which is contrary to the belief among parents and private sector. Parents and business leaders lament that there are no carrots/sticks used to motivate teachers. Consequently, there has been greater push to implement some form of merit pay to improve motivation.

Which of the following statements will disprove the claim of the parents and business leaders?

(a) A recent study suggested that teachers are self- motivated,
(b) Teachers are largely motivated, by financial incentives; so pay for performance will induce, greater and more effective effort
(c) Learning cannot be measured reliably and accurately hy a test given once a year
(d) Teaching is a solo-activity, there is a little interdependence with other co-curricular and extra curricular activities in school
(e) To error is human and hence stick should be used to reduce errors

35. *Read the following newspaper report*

In a new study by Harvard School of Public Health (HSPH), researchers explored how caffeine can serve us a "mild anti-depressant". They concluded that "drinking several cups of coffee daily appears to reduce the risk of suicide". Data pulled in from three large studies in the US showed that the suicide risk of those who drank two to four cups of caffeinated coffee a day was about half of those who drank decaffeinated coffee or very little or no coffee. In the studies, a respondent's caffeine consumption was assessed every four years through a questionnaire. The respondents were all adults and the study was published online. The authors, however, cautioned the public from increasing coffee intake as it could result in 'unpleasant side effects', 'Overall, our results suggest that there is little further benefit for consumption above two to three cups/day or 400 mg of caffeine/day/ wrote the researchers. The authors observed that there was no major difference in sucide risk for adults who drank two to three cups a day from those who drank four cups or more.

Which of the following shaped graph would best capture the above paragraph (X-axis represents 'coffee intake' and Y-axis represents 'coffee intake' and Y-axis represents 'suicidal tendency')?

(a) A straight line
(b) Saw tooth curve
(c) S shaped curve
(d) U shaped curve
(e) L shaped curve

36. A group of nine runners will finish the 400 m race in a certain order. The runners are Ashok, Benjamin, Chetan, Divya, Eshant, Faneesh, Girish, Himani, Irravaty. They all finish at different times and their finishing order is as follow.

I. Faneesh finishes before Ashok.
II. Divya finishes before Benjamin and Eshant.
III. Irravaty finishes after Chetan.
IV. Girish finishes after Ashok.

Which is the best position Grish can finish?

(a) First (b) Second (c) Third (d) Fourth
(e) Fifth

Directions (Q. Nos. 37-39) Read the following caselet carefully and answer the questions that follow.

Intercontinental Business Manufacturing (IBM) was doing a roaring business. Demand of the products was high and supply of raw-material was abundant. IBM was manufacturing three different products. Some customers bought two types of products and some bought only one. The three products were 'quickie-quick' , 'run-of-the-mill' and "maxi-max". Customers were not complaining loudly.

Ram, the product manager, was confused ! Demand for 'quickie-quick' was increasing. Raw material suppliers wanted to supply lower quality at cheaper price. It was profitable for the company to increase production. Quality department was not happy with the product. Ram meet Rahim, the CEO, who, as always, wanted higher profits. He said that IBM will set-up a committee for improving the quality.

37. **What must not be done by Ram?**

(a) Only produce ,'quickie-quick' as it gives highest profits
(b) Increase the production for "quickie-quick" and ask the supplier for better quality raw material
(c) Maintain the level of production for 'quickie-quick' and ask the supplier for better quality raw material
(d) Reduce the production of 'quickie-quick1 till committee submits its report
(e) Stop production of 'quickie-quick' till-committee, submits its report

38. **Rahim set-up a 'brand' committee comprising a few selected' managers, headed by Robert. The committee proposed that IBM should continue to manufacture the three differently branded products. It also proposed to recruit a new brand manager for improving brand image of the products. It agreed with Rahim that the company should increase the price. Rocket Singh, head of sales, was confused because he realised that customers were miffed with 'run-of-the-mill' and 'maxi-max'.**

What should Rocket Singh do?

(a) Launch one more product to increase sales
(b) Stop production of quickie-quick
(c) Launch a campaign on social media to increase awareness about company's products
(d) Send an anonymous e-mail to all the employees highlighting customer dissatisfaction
(e) Conduct a research study to find out the reason for customers dissatisfaction

39. **Some the-managers in production department were discussing the problems faced in shipping products in time. They complained that they had to undertake responsibility of creating financial and marketing plans in addition to responsibility of production planning.At the same time, finance and marketing managers were to be involved in preparing production plans. It was expected that this will reduce customer complaints. It was rumored that these changes were initiated by the managers educated in the US.**

Which of the following is the best possible course of action available to the affected manager?

(a) Create a union to safeguard their rights
(b) File a low suit against the company
(c) Create a forum for discussion and resolution of issues
(d) Register a complaint with the human rights body
(e) Go for further education to the US

Response & Interpretations **(17.2)**

1. (*a*) It is inferred from the passage that the bidding has been done according to government policies and in the benefit of the citizens. According to the minister, the loss that the media is talking about is national.

2. (*a*) According to the minister's view, it is correct to say that media should not act as a reporter, prosecutor and judge at the same time, as it may affect the goodwill and policies of the Government.

3. (*d*) Corporate managers, the minister and the head of the nation all are responsible for the issue, as the one who disburses the responsibility is held equally responsible to the one who is fulfilling it.

4. (*c*) Option (c) seems to be the only possible reason because both the instances happenned over the same period of time.

5. (*b*) Option (b) seems to be the correct answer in the last lines of the statement. It is mentioned "Despite the success of the treatment, most doctors have not embraced the surgery." This means that there is definitely some risk of life that's why doctors might not easily suggest Gastric bypass surgery and obesity is one of the leading contributors to heart disease and hypertion because from the starting line we can understand that it usually happens with obese people.

6. (*c*) Both Statements I and II are required to calculate the profit/loss.

7. (*d*) Contribution of total online store accounts for 50%.

$$\therefore \text{ Total online contribution} = \frac{21000}{2} = 10500$$

$$\text{Now, Additional cost for Red/unit} = \frac{5500}{275} = 20$$

$$\text{Additional cost for Yellow/unit} = \frac{3100}{100} = 31$$

$$\text{Additional cost for Green/unit} = \frac{4800}{80} = 60$$

$$\text{Additional cost for Violet/unit} = \frac{2400}{80} = 30$$

$\therefore$ Total additional cost for online

$$= (200 \times 20 + 50 \times 31 + 50 \times 60 + 50 \times 30)$$
$$= 4000 + 1550 + 3000 + 1500$$
$$= 10050$$

$$\therefore \text{ Profit} = \text{Contribution} - \text{Total additional cost}$$
$$= 10500 - 10050$$
$$= 450$$

8. (*b*) Contribution of super market and book store is 1 : 2 in remaining 50%.

$\therefore$ Contribution of super market $= \frac{1}{3} \times 10500 = 3500$

and contribution of book stores $= \frac{2}{3} \times 10500 = 7000$

Now, additional cost for super market

$= 65 \times 20 + 20 \times 31 + 21 \times 60 + 21 \times 30$

$= 1300 + 620 + 1260 + 630 = 3810$

$\therefore$ Profit = Contribution – Additional cost

$= 3500 - 3810 = -310$

Similarly, additional cost for book store

$= 10 \times 20 + 30 \times 31 + 9 \times 60 + 9 \times 30$

$= 200 + 930 + 540 + 270 = 1940$

$\therefore$ Profit $= 7000 - 1940 = 5060$

So, least profit making is super market.

9. (*a*) As calculated before, the highest profit making for B and C is bookstore = + 5060

10. (*c*) To best describe the opinion, it is possible when many students sitting next to each other have the some incorrect answers for multiple choice. However, there can be small error in judgement.

11. (*c*) Among the six options only one is correct. So, rest five are wrong.

If they all mark same option at a time then probability of wrong answer is $\frac{1}{5}$.

As they all can mark 5 wrong choices,

Then, probability of same wrong answer

$$= \frac{1}{5} \times \frac{1}{5} \times \frac{1}{5} \times \frac{1}{5} \times \frac{1}{5} = \frac{1}{3125}$$

$\therefore$ Probability for same wrong answer for 4 consecutive questions

$$= 4 \times \frac{1}{3125} = \frac{4}{3125}$$

12. (*c*) Statements numbered from I to VI are only necessary statements which if taken together can give us the exact number of students from each sections.

13. (*d*) If we consider the condition or ranking given by second student, then he has got two ranks to be correct and two student correctly followed by their predecessor.

So, two positions are fixed among the five also they cannot follow the ranking given by first student.

Then ranking can be Devroopa, Ankita, Bhagyashree, Chanchal and Esha.

So, Devroopa stood first in all.

14. (*a*) Only option (c) is the reason for the initial success of Shambu's hunger strike and rest I, II, IV are not responsible for Shambu's success, as it is clear from the passage that many people benefitted from corruption as the income lend of people was rising directly or indirectly *i.e.,* the people were not very upset, only the media caught the opportunity to make the news.

15. (*b*) As, it is already described in the passage that Shambu was an old and illiterate man, therefore he was only able to use hunger strike as a weapon but for next time the same method failed.

16. (*d*) Marathe should try to verify the facts from other sources as well because there might be some jealousy feeling between Kale and his colleague due to which he is having such bad raputation in his office. Marathe should not easily believe on Gore, he should verify it from other sources.

After collecting the information about Kale, he should be suggested to visit the family counselor which might help him in improving his personality. If still, he is not been able to adjust with his colleagues he should take transfer to the Chennai office.

17. (*e*) Concerning it as a personal problem of employees, Marathe left no right to interfere in it.

18. (*e*) Bhosle was of the opinion that emotionally unstable persons find it difficult to get back to normal working life.

19. (*a*) Vardarajan was not finding the work challenging enough as he has already achieved the best performance award.

20. (*c*) By giving Vardarajan a more challenging assignment he can be rejuvenated and start taking more interest in his work. Or by sending him for further training on decision making under-stress.

21. (*b*) If we considered that Vardarajan is right then the officers of the organisation should ensure that every member of the organisation is promoted objectively and with full transparency.

22. (*e*) Both (c) and (d) options are correct, committee should be constituted for the investigation and appropriate action should be taken.

23. (*e*) Ask the SPC to resend the details of the short-listed students including their verified grades.

24. (*b*) To contact the college authorities to get the more information is the best choice because the accurate and detailed information can be only obtained from college only neither from any facebook friend or president of SPC.

25. (*d*) If I were in position of Vijaya, I will talk to the director and seek his opinion as it's the director who has given the responsibility to Vijaya for preparing report.

26. (*b*) Launching cost of the product = 50 crore

Expected sale when there is 50% probability of product being successful = 50% of sale on successful

+ 50% of sale being unsuccessful

$= \frac{50}{100} \times 100 + \frac{50}{100} \times 20$

$= 50 + 10$

= 60 crore

$\therefore$ Total sale = 60 crore

Now, Profit = Sale – Launching cost

$= 60 - 50$

= 10 crore

27. (*e*) After favourable test result

Success rate = 80%

∴ Unsuccessful rate = 100 – 80 = 20%

Now, total cost of product after test = 50 + 10 = 60 crore

∴ Total sale after test result = 80% sale on successful + 20% sale on unsuccessful

$$= \frac{80}{100} \times 100 + \frac{20}{100} \times 20$$

$$= 80 + 4 = 84 \text{ crore}$$

∴ Profit = Total sale – Total cost

$$= 84 - 60 = 24 \text{ crore}$$

28. (*b*) P (Product failure) = P (Product failure when test was favourable) + P (Product failure when test was unfavourable)

$$= [0.7 \times (1 - 0.8)] + [(1 - 0.7) \times (1 - 0.3)]$$

$$= (0.7 \times 0.2) + (0.3 \times 0.7)$$

$$= 0.14 + 0.21 = 0.35$$

29. (*e*) Cost of product = 50 + 10 = 60 crore

Now, when unfavourable, the success rate is 30% and failure rate is 70%

= 30% of 100 + 70% of 20

$$= \frac{30}{100} \times 100 + \frac{70}{100} \times 20$$

$$= 30 + 14 = 44 \text{ crore}$$

∴ Profit = 44 – 60 = – 16 crore

(negative sign indicates loss)

30. (*b*) Since, the probability of winning at international level is minimum, so the best team would be the team having maximum of cent-per cent scores. There students scoring cent-per cent scores maximum number of times are 2, 6, 8, 14.

Now, looking at the option (b) 2, 8, 14 would from a team for international competition.

31. (*d*) Since, the probability of wining at district level is maximum *i.e.,* 0.95, so the best team would be the team having maximum average but minimum of cent-per cent scores.

Hence 4, 11 and 13 would form a team for district level competition.

32. (*d*) Since, the probability of winning at national level is less so the students having maximum number of cent-per cent score will form a team other than those students who are already in team for international competition.

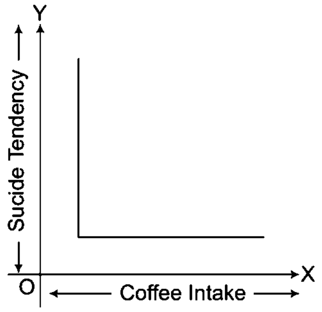
Therefore, team for national competition contains 3, 6, and 1 students.

33. (*a*) In the given lines, the issue deals with the interpretation of works of anthropologists and the Heisenberg uncertainly principle is for predicting the position of electrons.

34. (*a*) Passage clearly suggests that money is a great motivator.

So, disproving is lying in option (a).

35. (*a*) The curve will be L shaped curve as shown in the given below figure



36. (*e*) From the given statements,

Faneesh > Ashok > Girish

Divya > Benjamin/Eshant

Irravaty > Chetan

From the above analysis best position for Girish is to finish after Faneesh and Ashok.

Therefore, Girish finish third.

37. (*b*) Ram should not only, produce 'quickie-quick'. He should have taken steps, *i.e.,* the issues regarding the product should be resolved first.

38. (*e*) Rocket singh should conduct a research study to find the reason for customers dissatisfaction.

39. (*c*) The best possible course of action avilable to the affected managers is to create a forum for discussion and resolution of issues.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-5) Study the following information carefully and answer the questions given below.

[Syndicate Bank (PO) 2009]

Following are the conditions for selection Systems Manager in an organisation.

The candidate must

- (i) be a graduate engineer in IT, Computer Science or Electronics with atleast 60% marks.
- (ii) be atleast 30 yr and not more than 40 yr as on 1st September, 2009.
- (iii) have secured atleast 40% marks in the written examination.
- (iv) have secured atleast 50% marks in the selection interview.
- (v) have post qualification work experience of atleast 10 yr in the systems department of an organisation.

In the case of candidate who satisfied all the conditions except

- (a) at (i) above but has secured atleast 60 % marks in MEIT or Computer Science, the case is to be referred to DGM systems.
- (b) at (v) above but has post qualification experience of atleast five years as deputy systems manager, the case is to be referred to the GM systems.

In each questions below, details of one candidate are given. You have to take one of the following courses of action bases on the information provided and the conditions and subconditions gives above and mark the number of that course of action as your answer. You are not to assume anything other than the information provided for each candidate. All these cases are given to you as on 1st September, 2009.

Give answer

(a) if the candidate is to be selected
(b) if the candidate is not to be selected
(c) if the case is to be referred to DGM systems
(d) if the case is to be referred to GM systems
(e) if the data provided are not adequate to take a decision

1. Samir Ghosh was born on 25th May, 1978. He secured 65 % marks in BEIT in the year 1999. Since, then he has been working in the systems department of an organisation. He has secured 50% marks in both written examination and selection interview.

2. Navin Prakash has secured 62% marks in BE Computer Science. He has been working in the systems department of an organisation since July 1999, after completion of BE. He was born on 4th April, 1974. He has secured 55% marks in selection interview and 45% marks in the written examination.

3. Neeta Pathak has been working as deputy systems manager in an organisation for the past 7 yr after completing her BE in IT with 70% marks. She has secured 45% marks in selection interview and 55% marks in the written examination. She was born on 12th November, 1978.

4. Ashok Malhotra was born on 19th March, 1977. He has secured 56% marks in both selection interview and written examination. He has secured 58% marks in BEIT and 72% marks in MEIT. He has been working in the systems department of an organisation for the past 11 yr after completing MEIT.

5. Gemma D′ Souza was born on 15th December, 1972. She has secured 60% marks in both written examination and selection interview. She has been working as deputy systems manager for the last 6 yr in an organisation after completing her BE Electronics with 75% marks.

Directions (Q. Nos. 6-12) Study the following information carefully and answer the questions which follow.
[BOI (PO) 2009]

A bank is disbursing educational loans to meritorious students. Loans will be made available to applicants who possess the following criteria.

The candidate must

(i) be a citizen of India.
(ii) have secured admission to a post-graduate course (master's or PG diploma) offered by an Indian or foreign university in India.
(iii) have secured 60 % marks in the entrance examination for the course.
(iv) have security (property/LIC policy) equivalent to the loan amount.

However, if the applicant fulfils the above mentioned criteria except

(a) at (ii) above, the case may be referred to the loan committee.
(b) at (iv) above, guarantee of a third party who has an account with the bank may be obtained.

Give answer

(a) if the loan is to be sanctioned
(b) if the loan is to be rejected
(c) if the loan is to be referred to the loan committee
(d) if guarantee from an account holder is needed
(e) if the data provided is inadequate to take a decision

6. Shruti has secured admission to MNV University in Chennai for a post-graduate degree in management. She obtained 65% in the entrance test for the course. She has an Indian passport.

7. Milind has applied and secured admission for a post-graduate degree in advertising at MIC University, Ahmedabad. He has an LIC policy equivalent to the loan amount. He secured 70% in his graduation and is an Indian citizen.

8. Prakash has applied for a post-graduate course in IT and animation which will commence from January in Kolkata. He has secured admission to the course having obtained 60% in the written entrance test. His uncle, who has an account with the bank, is willing to stand guarantor.

9. Anil is an Indian Science graduate who has secured admission for a master's degree in Computer Science from a prestigious Indian University. He stood first in the entrance test with 82% marks. His family is willing to use their house, which is equivalent in value to the loan amount, as security. He will stay with his uncle in Dubai during the course.

10. Nikhil's part time PG diploma in management will begin in December. He secured 65% in the all India entrance exam and has secured admission to a college in Mumbai. He has requested a transfer for the duration of the course. He has an LIC policy equivalent to the loan amount. Nikhil holds an Indian passport.

11. Maria secured 75% in the entrance exam to NVT College, Pune and has obtained admission. An Indian national, she has the necessary property to offer as security for the loan amount. The duration of her undergraduate degree course in Computer Applications is 3 yr.

12. Deepa obtained 70% in her engineering entrance exam for her master's and has secured admission to the college of her choice. She has an LIC policy equivalent in value to the loan amount.

Directions (Q. Nos. 13-17) Study the following information carefully and answer the questions given below.
[IBPS (PO) 2013]

An organisation wants to recruit system analysts. The following conditions apply.

The candidate must

(i) be an engineering graduate in computer/IT with atleast 60% marks.
(ii) have working experience in the field of computer atleast for 2 yr after acquiring the requisite qualification.
(iii) have completed minimum 25 yr and maximum 30 yr of age as on 01.12.2013.
(iv) be willing to sign a bond for ₹ 50000.
(v) have secured minimum 55% marks in selection test.

However, if the candidate fulfils all other conditions.

Except

(a) at (i) above, but is an Electronics Engineer with 65% or more marks the case is to be referred to the General Manager (GM)-IT.
(b) at (iv) above, but has an experience of atleast 5 yr as a Software Manager, the case is to be referred to the VP.

In each question below, detailed information of candidate is given. You have to carefully study the information provided in each case and take one of the following courses of actions based on the information and the conditions given above. You are not to assume anything other than the information provided in each question. All these case are given to you as on 01.12.2013. You have to indicate your decision by marking answers to each question as follows

Give answer

(a) if the case is to be referred to VP
(b) if the case is to be referred to GM
(c) if the data provided is not sufficient to take a decision
(d) if the candidate is to be selected
(e) if the candidate is not to be selected

13. Ms Suneeta is an IT Engineer with 60% marks at graduation as well as in selection test. She is working as a Software Engineer for last 3 yr after completing engineering degree and has completed 27 yr of age. She is willing to sign the bond of ₹ 50000.

14. Rakesh Rao is a Computer Engineer graduate and thereafter is working as a Software Manager for last 6 yr. He has secured 72% marks at graduation and 67% marks in selection test. His date of birth is 5th December, 1984. He is not willing to sign the bond for ₹ 50000.

15. Ramkumar is an engineering graduate in computers with 78% marks passed out in 2007 at the age of 23 yr. Since, then he is working as a Software Manager in an engineering firm. He doesn't want to sign the bond for ₹ 50000. He has cleared the selection test with 72% marks.

16. Nishant is an Electronics Engineer passed out in June, 2010 at the age of 22 yr. Since, then he is working as a programmer in a software company. He has passed the selection test with 66% marks and is willing to sign the bond.

17. Kalyani is an engineer with 72% marks in telecommunicator. She has just completed 27 yr of age. She has cleared the selection test with 59% marks. She is willing to sign the bond.

Directions (Q. Nos. 18-27) For recruiting management trainees in an organisation, the following criteria as have been laid down. **[Syndicate Bank (PO) 2007]**

The candidate must

(i) be a first class graduate in Commerce with atleast 65% marks.
(ii) have secured atleast 70% marks in SSC.
(iii) be not more than 26 yr and not less than 21 yr of age as on 1st August, 2007.
(iv) have secured atleast 60% marks in selection test.
(v) have secured atleast 50% marks in selection interview.

However, if a candidate fulfils all the above mentioned criteria except

(a) at (i) above but is an Economics graduate with atleast 70% marks, the case may be referred to the GM of the organisation.
(b) at (v) above but has secured atleast 40% marks in selection interview and atleast 70% marks in selection test, the case may be referred to the President of the organisation.

In each of the questions below, information of one candidate is given. You have to take one of the following five decision bases on the information provided and the criteria and conditions given above. You are not to assume anything other than the information provided in each question. All these cases are given to you as on 1st August, 2007. You have to indicate your decision by marking answers to each question as follows .

Give answer

(a) if the candidate is to be selected
(b) if the candidate is not to be selected
(c) if the case is to be referred to GM
(d) if the case is to be referred to President
(e) if the data is inadequate to decide the course of action

18. Abhishek has passed degree examination in Commerce with Economics as one of the subjects in first class with 68% marks in 2006 at the age of 22 yr. His marks in SSC was 73%. He has cleared the selection test with 64% marks and selection interview with 62% marks.

19. Sharad Bhatia has passed B.Com. in first class with 69% marks and SSC with 78% marks. He joined a private organisation as an officer in June 2005 immediately after completing 23 yr of age. He has scored 65% marks in selection test and 48% marks in selection interview.

20. Priyanka Ghate has passed graduation in arts with specialisation in Economics in first class with 75% marks. Her date of birth is 8th July, 1985. She had scored 89% marks in SSC, 63% in selection interview and 61% marks in selection test.

21. Rakesh has passed SSC with 85% marks and graduation in arts with specialisation in Economics with 72% marks. His date of birth is 12th June, 1985. He has scored 65% marks in selection test as well as in interview.

22. Sarita Dere is a post-graduate in Commerce passed in first class with 62% marks. Her score in SSC was 75%. She completed 23 yr of age on 23rd December, 2006. She has scored 64% marks in selection test and 55% marks in selection interview.

23. Ashish Gharpure is a Commerce graduate passed out in june 2006, at the age of 21 yr with 72% marks and first class. Presently he is pursuing his post-graduation in Economics. He had scored 82% marks in SSC. He has cleared the selection test with 67% marks and selection interview with 56% marks.

24. Radhika has passed BA examination with specialisation in Economics securing 76% marks and first class. She had topped her class in SSC examination with 82% marks. She has completed 24 yr of age on 25th May, 2007. She cleared the selection test with 66% marks and the selection interview with 54% marks.

25. Ashwani is a B.Com. passed in first class with 68% marks. He had scored 75% marks in SSC. His date of birth is 14th September, 1984. He had cleared the selection test with 74% marks and selection interview with 45% marks.

26. Rajesh is a graduate and post-graduate in Commerce and has passed both these examinations in first class. He had scored 75% marks in SSC. He completed 23 yr of age on 23rd June, 2007. He has scored 65% marks in interview as well as selection test.

27. Rashmi is B.Com. in first class with 62% marks and M.Com. also in first class with 67% marks. Her marks in SSC were 85%. She completed 24 yr of age on 3rd October, 2006. She has scored 66% marks in selection test and 56% marks in interview.

Directions (Q. Nos. 28 -34) Study the following information carefully and answer the questions given below.

[UCO Bank (PO) 2008]

Following are the conditions for selecting manager finance in an organisation.

The candidate must

(i) be a graduate in any discipline with atleast 50% marks.
(ii) be a post-graduate in management with specialisation in finance.
(iii) be atleast 25 yr and not more than 35yr as on 1st February, 2008.
(iv) have post qualification work experience of atleast two years in the account/finance department of an organisation.
(v) have secured atleast 40% marks in the selection process.

In the case of a candidate who satisfies all the criteria.

(a) at (ii) above, but has worked as deputy manager finance in an organisation for atleast 3yr, his/her case is to be referred to general manager finance.
(b) at (v) above but has secured atleast 70% marks in post-graduation, his/her case is to be referred to President finance. In each question below, detailed information of one candidate is provided. You have to take one of the following courses of action based on the information provided and the conditions and subconditions given above and mark your answer accordingly. You are not to assume anything other than the information provided in case of each candidate. All these cases are given to you as on 1st February, 2008.

Give answer

(a) if the candidate is not to be selected
(b) if the data provided are not adequate to take a decision
(c) if the case is to be referred to General Manager Finance
(d) if the case is to be referred to President Finance

(e) if the candidate is to be selected

28. Neeta Kothari was born on 10th September, 1975. She has been working in the finance department of an organisation for the past 4 yr after completing her MBA with finance specialisation. She has secured 60% marks in the selection process.

29. Gopal Sharma has secured 60% marks in graduation. He has been working in the finance department of an organisation for the past 4 yr after completing his MBA in finance with 75% marks. He was born on 25th May, 1978. He has secured 39% marks in the selection process.

30. Sikha Dwivedi was born on 8th March, 1975. She has secured 60% marks in both graduation and post-graduation. She has been working in the accounts department of an organisation for the past 3 yr after completing her post-graduation. She has secured 65% marks in the section process.

31. Samir Malhotra has secured 55% marks in graduation and 65% marks in MBA finance. He has been working as deputy manager finance in organisation for the past 4 yr after completing his MBA. He was born on 24th February, 1980. He has secured 60% marks in the selection process.

32. Somnath Banerjee was born on 8th July, 1972. He has secured 65% marks in both graduation and MBA finance. He has also secured 70% marks in the selection process. He has been working in the accounts department of an organisation for the past 3 yr after completing his MBA.

33. Ashok Chandra has secured 70% marks in graduation and 65% marks in MBA finance. He has been working for the past 3 yr in the finance department of an organisation after completing his MBA. He has secured 35% marks in the selection process. He was born on 16th December, 1979.

34. Avinash Chopra has been working as deputy manager finance in an organisation for the past 4 yr after also done a diploma in finance management. He has secured 55% marks in the selection process. He was born on 3rd April, 1978.

Directions (Q. Nos. 35-44) Study the following information carefully and answer the questions given below . **[IRMA 2008]**

Following are the conditions for granting agricultural loan of ₹ 1 lakh to the farmers by a Gramin bank.

The farmer must

(i) have atleast three acres of land.
(ii) not be more than 55 yr old as on 1st November, 2008.
(iii) be able to provide collateral security of atleast ₹ 50000.
(iv) not be having any other outstanding loan from the bank.
(v) repay the loan in two years time.

In the case of a farmers who satisfies all other criteria except

(a) at (iii) above but can give collateral security of atleast ₹ 25000, the case is to be referred to the GM of the bank.
(b) at (iv) above but the balance outstanding loan is less than ₹ 40000, the case is to be referred to the chairman of the bank.

In each question below is given the details of one farmer. You have to take one of the following courses of action based on the information provided and the conditions and subconditions given above. You are not to assume anything other than the information provided in each question. All these cases are given to you as on 1st November, 2008.

Give answer

(a) if the loan is to be granted to the farmer
(b) if the loan is not to be granted to the farmer
(c) if the data provided are inadequate to take a decision
(d) if the case is referred to GM
(e) if the case is to be referred to the chairman

35. Saurav Behera was born on 12th July, 1962. He will repay the loan in twenty four equated monthly installments. He has provided collateral security of ₹ 20000. He does not have any outstanding loan from the bank. He owns four acre of land.

36. Jagat Das owns six acre of land. He was born on 5th December, 1960. He has an outstanding loan from the bank of ₹ 35000. He has provided collateral security of ₹ 50000. He will repay the loan in two year time.

37. Sudesh Gaur has provided collateral security of ₹ 30000. He owns six acre of land. He will repay the loan in two year time. He does not have any outstanding loan from the bank. He was born on 28th February, 1961.

Master *Exercise*

38. Mohd Ghous owns three acre of land. He was born on 20th October, 1953. He does not have any outstanding loan from the bank. He will repay the loan in 2 yr time. He has provided collateral security of 80000.

39. Nimesh Patel has an outstanding loan from the bank to the extent of ₹ 35000. He will repay the loan on two years time. He owns five acre of land. He has provided documents of collateral security of ₹ 55000. He was born on 8th May, 1958.

40. Sushil Ghatge owns three acre of land and he does not have any outstanding loan from the bank. He will repay the loan in twenty four equated monthly instalments. He has provided collateral security of ₹ 60000.

41. Mohan Dev was born on 2nd April, 1955. He owns four acre of land. He does not have any outstanding loan from the bank. He will repay the loan within 2 yr. He has provided documents of collateral security of ₹ 70000.

42. Francis D' Costa owns four acre of land. He was born on 15th July, 1959. He can repay the loan in 2 yr time. He has an outstanding loan from the bank to the extent of ₹ 35000. He has provided collateral security of ₹ 65000.

43. Sukhdev Singh was born on 12th October, 1955. He will repay the loan in twenty four equated monthly installments. He has provided collateral security of ₹ 70000. He own seven acre of land.

44. Neeraj Kumar owns five acre of land. He will repay the loan in 2 yr time. He does not have any outstanding loan from the bank. He has provided collateral security of ₹ 30000. He was born on 19th December, 1958.

Directions (Q. Nos. 45-49) A marketing firm wants to recruit trainee officers. Following is the criteria for selection.

[MHA-CET 2009]

The candidates must

(i) be a graduate in any discipline with atleast 55% marks.
(ii) have completed post-graduate degree/diploma in marketing management with atleast 65% marks.
(iii) have cleared the selection test with atleast 50% marks.
(iv) have cleared the interview with atleast 55% marks.
(v) be willing to sign a bond for 2 yr.
(vi) be not less than 21 yr and not more than 26 yr of age as on 1st February, 2009.

However, if a candidate satisfies all the above criteria except

(a) at (ii) above but has working experience in the marketing department for atleast one year and has a post-graduate degree/diploma with any specialisation, the case is to be referred to the Vice-President.
(b) at (v) above but is willing to pay an amount of ₹ 1 lakh in case, if the candidate leaves the case is to be referred to the head to marketing department.

In each of the question below, information of one candidate is given. You have to take one of the following five decisions based on the information provided and the criteria and conditions given above. You are not to assume anything other than the information provided in each question. All these cases are given to you as on 1st February, 2009. You have to indicate your decision by marketing answer to each question as follows.

Give answer

(a) if the case is to be referred to Vice-President
(b) if the case is to be referred to head of marketing department
(c) if the data provided is inadequate to take a decision
(d) if the candidate is to be selected
(e) if the candidate is not to be selected

45. Meenal Soni is a graduate passed with 58% marks. She has done MBA HR with 64% marks in August 2004 and is working in the marketing department of a bank since January 2005. She has completed 24 yr of age in November 2008. She is willing to sign the bond for 2 yr. She has cleared the selection test with 58% marks and interview with 56% marks.

46. Avinash Chavan is a post-graduate in management with specialisation in marketing, passed with 67% marks. He is working as a junior officer in the marketing department of a private company. He is not willing to sign the bond but is willing to pay ₹ 1 lakh in case, if he leaves. He has cleared the selection test with 52% marks and interview with 59% marks. His date of birth is 17th July, 1983.

47. Sujay has passed BE with 67% marks and MBA marketing with 69% marks. He has scored 56% in selection test and 63% marks in interview. He has recently celebrated his 25th birthday on 17th September, 2008. He does not want to sign a bond but is willing to pay ₹ 1 lakh, if he leaves.

Master Exercise

48. Rohan Bhalla is 24 yr old Science graduate passed with 58% marks and MBA in marketing with 68% marks. He has secured 53% marks in selection test as well as in interview. He is willing to sign the bond for 2 yr.

49. Nandita Sharma B.Com. graduate passed in first class diploma in marketing management with 62% marks and has passed post-graduate with 72% marks. She has cleared selection test and interview with 56% and 58% marks, respectively. His date of birth is 21st December, 1985. She is willing to sign the bond for 2 yr.

Directions (Q. Nos. 50-51) On the basis of the information given in the following case.

Vivekananda Memorial Elocution Competition (VMEC) in Viswavijay Public School (VPS) has a history of 40 yr. Apart from the founder's day and annual day celebrations, it is the most important event of the school. In recent times, due to the increased popularity of reality shows on television channels and for various other reasons, the elocution competition lost its appeal. Interest of both students and parents has been eroding over a period of time. To ensure sufficient audience. Mr Ivan, Head of English Department, introduced choral recitation for junior section as a part of elocution competition. Three classes, each consisting of forty students, get short listed for the final performance of choral singing on the day of VME (C). Most of the parents and family members of these students attend the function to encourage them. This initiative increased the number of people attending the elocution competition.

Some teachers are unhappy with the emphasis given on the elocution competition, since they are expected to be present at the school on the day of competition, which normally happens on a weekend to accommodate the working parents.The teachers were not granted leave on the day of VMEC and they used to be unhappy regarding this aspect.

50. Mrs Shabina the principal of VPS, is aware that some of her teachers are unhappy. She wants to be seen as fair and just. Which option is the best one that she should exercise?

(a) Introduce separate music and dance competitions in same format as the elocution competition
(b) Appropriately compensate those teachers who volunteer to come for the extra day
(c) Appoint a committee of teachers, parents and management representatives to come up with possible suggestions within deadline
(d) Appoint a committee of teachers to come up with possible suggestions and ensure that majority of committee members are staunch supporters of the current practices.
(e) Exercise the authority of the principal because she wants to retain all traditions

51. A group of unhappy teachers have come up with a list of action plans for the consideration of their colleagues. The action plans are listed below.

I. Exposing Mr Ivans intentions behind the inclusion of choral recitation.
II. Conduct an open house discussion to gauge the unhappiness and to identify possible solutions.
III. Introduce music and dance competitions in same format as elocution competition.
IV. Demand compensation for their work on the day of VMEC.

Mr Zacharia, one of the senior teachers and a well wisher of VPS, is asked to go through the action plans and make recommendations that benefits VPS the most. He would recommend

(a) I and II (b) II and IV (c) I and III
(d) I and IV (e) I, II and IV

Directions (Q. Nos. 52-54) On the basis of the information given in the following case.

Dev Anand, CEO of a construction company, recently escaped a potentially fatal accident. Dev had failed to notice a red light while driving his car and attending to his phone calls. His well-wishers advised him to get a suitable replacement for the previous driver Ram Singh, who had resigned three months back.

Ram Singh was not just a driver but also a trusted lieutenant for Dev Anand for the last five years. Ram used to interact with other drivers and gathered crucial information that helped Dev in successfully bidding for different contracts. His inputs also helped Dev to identify some dishonest employees and to retain crucial employees who were considering attractive offers from his competitors. Some of the senior employees did not like the informal influence of Ram and made it difficult for him to continue in the firm.

Dev provided him an alternative job with one of his relatives.

During the last three months Dev has considered different candidates for the post. The backgrounds of the candidates are given the table below.

Dev is primarily looking for a stable and trustworthy driver, who can be a suitable replacement for Ram. His family members do not want Dev to appoint a young driver, as most of them are inexperienced. Dev's driver is an employee of the firm and hence the appointment has to be routed through the HR manager of the firm. The HR Manager prefers to maintain parity among all employees of the firm. He also needs to ensure that the selection of a new driver does not lead to discontent among the senior employees of the firm.

Name	Age	Educational qualification	Experience	Expected salary (in ₹)	Remarks
Sunder	32	Post-graduate	Seven years of driving experience	18000 per month	Ex-employers are highly satisfied. Their only concern is about his tendency to switch jobs after every six months. Enjoys the new news in every job but tends to lose interest after six months. Not willing to come for any more than six months.
Mani	23	Studied up to standard IX	1 yr	8000 per month	Claims to have more than one year of experience. But cannot provide any certificate or substantial it he has received a ₹ 22000 per month on account of his good performance as driver.
Chintan	44	Graduate	20 yr	20000 per month	Working as driver for the last one year after losing his previous job of a stenographer. He has been forced to take up the job of a driver.
Bal Singh	40	Literate	More than 20 yr	15000 per month	Cousin of Ram Singh, substituted Ram as Dev's driver whenever Ram was on leave. Currently working as a driver with Dev's in-laws. Strongly recommended by Ram. His knowledge and contacts in the firm is as good as Ram's.
Chetan	38	Standard XII	10 yr	12000 per month	Working as a temporary driver with Dev's major competitor for the last three years. The competitor has offered Chethan's service to Dev as a temporary basis. Chetan has also expressed his willingness to work on a long term basis, provided be is given an annual increment of ₹ 500, which is reasonable as per the market condition.

52. From his perspective and taking into account the family's concerns, Mr Dev would like to have

(a) Chethan (b) Chintan (c) Bal Singh (d) Mani
(e) Sunder

53. In order to resolve the conflicting preferences, one of Dev's friends suggested Dev, his family members and the HR manager to identify their most and the least preferred candidates without considering the concerns of other stakeholders.

I. Dev's most and least preferred candidates : Bal Singh and Chetan, respectively.
II. Family members most and least preferred candidates : Bal Singh and Chintan, respectively.
III. HR Manager's most and least preferred candidates : Chethan and Bal Singh, respectively.

Which of the above three statements is/are in conformity with the information provided in the passage?

(a) Only I
(b) Only II
(c) I and II
(d) II and III
(e) I, II and III

54. Who among the following five candidates is most likely to be rejected by the GM (HR)?

(a) Chetan
(b) Chintan
(c) Bal Singh
(d) Mani
(e) Sunder

Directions (Q. Nos. 55-56) On the basis of the following letter.

To the Chairman

Dear Mr Sailesh,

At the December 3, 2011 meeting, it was decided that no two officers would hold positions on the same committee. It has recently come to my attention that both Chaitanya Rao and Ajit Singh will be serving in some capacity on the Cultural Committee, and both have been nominated for officer status. As you know, this is in direct disregard for the rules as voted by the Members Council last December 3, 2011. I would hope that sufficient action be taken by the Disciplinary Committee (on which committee both of the above are members) so that this problem will be remedie

Sincerely,

Arvind Singh

55. Which of the following is an essential flaw that the writer of the letter overlooked?

(a) Rao and Ajit are already serving together on the disciplinary committee
(b) The chairman has no power in the matter
(c) The members council cannot pass rules limiting members
(d) Rao and Ajit are yet to be confirmed as officers
(e) Cultural committee is only active during the annual festival

56. If both the nominations are confirmed, which of the following exhaustively and reasonably, describes actions that may occur in the near future?

(a) Arvind resigns his membership
(b) Either Rao or Ajit resigns his membership
(c) Ajit resigns his committee post on the cultural committee
(d) Rao resigns his position on the cultural committee
(e) Either Rao or Ajit resigns his position from the cultural committee and the other resigns his position on the disciplinary committee

Directions (Q. Nos. 57-59) Read the following caselet and choose the best alternative for the questions that follow. **[XAT 2014]**

Ajay was thinking deeply about a problem that his organisation a business consulting company, faced, Globalisation had affected his company like many other companies. Despite the downturn, the current revenues remained healthy. However, Ajay knew it was inevitable that the company could not do business the same way. The complexity of managing the business had increased with time. Consultant were under pressure to deliver good and innovative solutions. The organisation had consultants from different age groups having a good mix of domain and industry expertise. It was a flat organisation with three levels. The biggest challenge for Ajay was to have consultants with latest knowledge who would also earn revenues. Getting additional business was a challenge as all the consultants were busy and it was very difficult to hire new consultants.

57. Some of the consultants were adept at applying old solutions to new problems. Ajay was not very sure, if this would work for longs. Some of the clients had complained about the performance of old and reputed consultants Ajay was mulling over the following five solutions to tackle this problem.

1. Decrease time spent on client interaction and increase time spent for generating solutions.
2. Increase support staff to help consultants to remain updated
3. Decrease the number of simultaneous projects handled by consultants.
4. Make it compulsory for consultants to work on inter-industry and inter-domain problems.
5. Recruit more consultants.

Which of the following would be the best sequence of decisions taken by Ajay (starting from immediate to distant)?

(a) 3, 2, 1, 5, 4
(b) 4, 3, 2, 1, 5
(c) 5, 4, 3, 2, 1
(d) 2, 4, 5, 1, 3
(e) 1, 5, 4, 3, 2

58. After Ajay implemented some of the steps mentioned above, consultants wanted to renegotiate their contract with the organisation. It seems that the organisation had never mentioned that consultants have to work across industries and domains. Some of the old consultants were reluctant to change their ways, while many of the younger consultants were willing to follow Ajay's advice.

Which of the following decision can be taken by Ajay to handle this situation?

(a) Retrench old consultants and recruit young consultants
(b) Prossurise non-conformists by giving preferential treatment to the conformists
(c) Negotiate with the old consultants and communicate that the new rules would apply to the new consultants only
(d) Do nothing and wait for a right solution to emerge, as with time resistance would lie down
(e) Discuss the issue in an open house and let solutions emerge democratically

59. Ajay was to retire in 5 yr and he wanted to leave behind a legacy. Order the following activities, from the most important to the least important, that Ajay should undertake in next five years.

1. Do nothing.
2. Set a future direction for the organisation in these challenging times.
3. Benchmark performance with respect to the best consulting company in industry.
4. Empower senior consultants and at the same time seek opinion of all others for handing future challenges outsiders.
5. Infuse fresh thinking by hiring outsides.

Choose the best option from the following sequences

(a) 1, 2, 3, 4
(b) 2, 3, 4, 5
(c) 3, 4, 2, 1
(d) 2, 5, 3, 1
(e) 2, 5, 4, 3

Response & Interpretations (Master Exercise)

Solutions (Q. Nos. 1-5)

Q. Nos.	Candidates	(i) (a)	(ii)	(ii)	(iv)	(v) (b)	Answers
1.	Samir	✓	✓	✓	✓	?	e
2.	Navin	✓	✓	✓	✓	✓	a
3.	Neeta	✓	✓	✓	✗	—	b
4.	Ashok	(✓)	✓	✓	✓	✓	c
5.	Gemma D' Souza	✓	✓	✓	✓	(✓)	d

1. *(e)* **2.** *(a)* **3.** *(b)* **4.** *(c)* **5.** *(d)*

Solutions (Q. Nos. 6-12)

Q. Nos.	Candidates	(i)	(ii) (a)	(iii)	(iv) (b)	Answers
6.	Shruti	✓	✓	✓	?	e
7.	Milind	✓	✓	?	✓	e
8.	Prakash	?	✓	✓	?	e
9.	Anil	✓	✓	✓	✓	a
10.	Nikhil	✓	✓	✓	✓	a
11.	Maria	✓	(✓)	✓	✓	c
12.	Deepa	?	✓	✓	✓	e

6. *(e)* **7.** *(e)* **8.** *(e)* **9.** *(a)* **10.** *(a)* **11.** *(c)* **12.** *(e)*

Solutions (Q. Nos. 13-17)

Q. Nos.	Candidates	I	II	III	IV	V	(a)	(b)	Answers
13.	Suneeta	✓	✓	✓	✓	✓			d
14.	Rakesh	✓	✓	✓	—	✓		✓	a
15.	Ramkumar	✓	✓	✓	—	✓		✓	a
16.	Nishant	—	✓	✓	✓	✓			c
17.	Kalyani	✗	?	✓	✓	✓			e

13. *(d)* Suneeta fulfils all conditions, so she is to be selected.

14. *(a)* Rakesh Rao fulfils condition (b) instead of (iv), so his case is to be referred to VP.

15. *(a)* Remkumar fulfils conditions (b) instead of (iv), so his case is to be referred to VP.

16. *(c)* Percentage marks of Nishant in graduation is not given, so data is insufficient.

17. *(e)* Kalyani is telecommunication engineer, so she is not to be selected.

Solutions (Q. Nos. 18-27)

Q. Nos.	Candidates	(i) (a)	(ii)	(iii)	(iv)	(v) (b)	Answers
18.	Abhishek	✓	✓	✓	✓	✓	a
19.	Sharad	✓	✓	✓	✓	(✗)	b
20.	Priyanka	(✓)	✓	✓	✓	✓	c
21.	Rakesh	(✓)	✓	✓	✓	✓	c
22.	Sarita	?	✓	✓	✓	✓	e
23.	Ashish	✓	✓	✓	✓	✓	a
24.	Radhika	(✓)	✓	✓	✓	✓	c
25.	Ashwini	✓	✓	✓	✓	(✓)	d
26.	Rajesh	?	✓	✓	✓	✓	e
27.	Rashmi	✗					b

18. (*a*) **19.** (*b*) **20.** (*c*) **21.** (*c*) **22.** (*e*) **23.** (*a*) **24.** (*c*)

25. (*d*) **26.** (*e*) **27.** (*b*)

Solutions (Q. Nos. 28-34)

Q. Nos.	Candidates	(i)	(ii) (a)	(iii)	(iv)	(v) (b)	Answers
28.	Neeta	?	✓	✓	✓	✓	b
29.	Gopal	✓	✓	✓	✓	(✓)	d
30.	Sikha	✓	?	✓	✓	✓	b
31.	Samir	✓	✓	✓	✓	✓	e
32.	Somnath	✓	✓	✗	-	-	a
33.	Ashok	✓	✓	✓	✓	✗	a
34.	Avinash	✓	(✓)	✓	✓	✓	c

28. (*b*) **29.** (*d*) **30.** (*b*) **31.** (*e*) **32.** (*a*) **33.** (*a*) **34.** (*c*)

Solutions (Q. Nos. 35-44)

Q. Nos.	Candidates	(i)	(ii)	(iii) (a)	(iv) (b)	(v)	Answers
35.	Saurav	✓	✓	(✗)	✓	✓	b
36.	Jagat	✓	✓	✓	(✓)	✓	e
37.	Sudesh	✓	✓	(✓)	✓	✓	d
38.	Mohd Ghous	✓	✗	-	-	-	b
39.	Nimesh	✓	✓	✓	(✓)	✓	e
40.	Sushil	✓	?	✓	✓	✓	c
41.	Mohan	✓	✓	✓	✓	✓	a
42.	Francis D' Costa	✓	✓	✓	(✓)	✓	e
43.	Sukhdev	✓	✓	✓	?	✓	c
44.	Neeraj	✓	✓	✓	-	-	d

35. (*b*) **36.** (*e*) **37.** (*d*) **38.** (*b*) **39.** (*e*) **40.** (*c*) **41.** (*a*)

42.(*e*) **43.** (*c*) **44.** (*d*)

Solutions (Q. Nos. 45-49)

Q. Nos.	Candidate	(i)	(ii) (a)	(iii)	(iv)	(v) (b)	(vi)	Answers
45.	Meenal	✓	(✓)	✓	✓	✓	✓	a
46.	Avinash	?	✓	✓	✓	(✓)	✓	c
47.	Sujay	✓	✓	✓	✓	(✓)	✓	b
48.	Rohan	✓	✓	✓	✗	-	-	e
49.	Nandita	✓	✓	✓	✓	✓	✓	d

45. (*a*) **46.** (*c*) **47.** (*b*) **48.** (*e*) **49.** (*d*)

50. (*b*) Ms Shabina is the principal which means she has power to take tough decisions single-handedly. A does not deal with the problem at hand. C seems too impractical with 'teachers, parents and management'. D is erroneous in its latter part with 'staunch supporters of the current practices'. It makes Ms Shabina bias. E is too dictatorial. B is fair and also achievable.

51. (*b*) The problem is that of teachers attending school on a weekend. Option (I) does not deal with this immediate problem. (II) is a very good recommendation. It will help minimize the discomfort of the unhappy teachers and ensure smooth functioning of the school. (III) overlooks the point. (IV) is in line with II and also the previous question.

52. (*c*) Mr Dev wants a permanent and trustworthy driver while his family wants a driver who is not young. The prospect of the HR manager is not to be considered at all.

As per Mr Dev's criteria, Sunder and Chintan cannot be considered because they are not permanent – Sunder because he keeps on changing jobs frequently and Chintan because he has become a driver only because he is out of a job.

Also, Chetan may not be appropriate because his services have been offered on a temporary basis. Again, this creates an issue of stability.

From the family's point of view, Mani is not fit as he is the youngest (23 yr old).

Bal Singh is the most appropriate in terms of age (40 yr), experience (20 yr), stability and trustworthiness (Ram Singh's cousin and has already worked for Dev Anand earlier).

Therefore, Dev Anand would like to have Bal Singh as his driver.

53. (*a*) Looking at the solution to the earlier question, Bal Singh would be Dev Anand's most preferred driver. Also, as explained earlier, Sunder and Chintan would not be appropriate as they not stable; Mani would not be suitable as he is not trustworthy (claims to have more than one year of experience but cannot prove it) and Chetan would not be proper as he is neither stable (he is coming over on a temporary basis) nor trustworthy (the competitor is offering the services which could be a ploy). So, Chetan would be the least preferred driver.

Thus, Statement I is in conformance with the given information.

The family members want a driver who is not young. Chintan who is the eldest among the candidates (44 yr) has been mentioned as the least preferred driver. Based on the given information, the least preferred driver for the family should have been Mani.

Thus, Statement II is not in conformance with the given information.

The HR manager would not select Bal Singh as he has a profile very similar to Ram Singh and that would cause discontent among senior employees. The HR manager wants to avoid that. So, Bal Singh will be his least preferred choice. Among the other four drivers, there is no information available to identify the driver who would be the most preferred.

Thus, Statement III is not in conformance with the given information.

➘ Once Statement II is recognised as not in conformance, the answer straightaway becomes option (a) as all the other options mention Statement II as one of the statements. Also, if you are confused in Statement III, note that there is no option that has only Statements I and III.

54. (*c*) The biggest criterion for the GM HR is that the selection of a new driver should not lead to discontent among the senior employees of the firm. The earlier driver, Ram Singh was compelled to quit because the senior employees did not like the influence of Ram on Dev Anand. This was because of his contacts, information gathering skills and proximity to Dev Anand.

Among the profile of the candidates, only that of Bal Singh is similar. It is given that his knowledge and contacts in the firm are as good as Ram Singh. It is also given that he used to substitute for Ram Singh and so already has some proximity to Dev Anand. As such, he is the only candidate who would definitely cause discontent among the senior employees. The other candidates may or may not do so.

So, Bal Singh is most likely to get rejected.

55. (*d*) The lines "Chaitanya Rao and Ajit Singh ...... and both have been nominated for officer status" should be considered carefully. It clearly means that they have yet to become officers.

56. (*e*) 1, 3 and 4 are biased as they cite resignation for only one of the two employees. 2 also communicates an either/or condition. Option 5 clearly declares that both have to resign from one or the other committee.

57. (*b*) The sequence of decision taken by Ajay is 4, 3, 2, 1, 5.

58. (*e*) To tackle the situation and to reach a solution, he should discuss the issue in an open house and solutions should be welcomed.

59. (*b*) The least option is 2, 3, 4, 5.

18

Input-Output

Input-Output is a process of rearrangement of data or sequence or message consisting of words or numbers or both based on some rule.

Different types of questions covered in this chapter are as follows

- Problems Based on Shifting
- Problems Based on Mathematical Operation
- Problems Based on Arrangement
- Miscellaneous Problems

In input-output questions, a sequence of words, letters or both is considered as an input and then this input is passed through a processing machine or reorganised to give the sequential outputs.

A candidate is required to trace the pattern used in reorganising the different elements of the input and subsequently determine the required final output or last step, elements' positions in some specified step etc.

Based on elements present in an input and the process followed for rearrangement of these elements, there can be many patterns on which questions can be asked.

Some of the specific types of patterns as follow

Type 1 Problems Based on Shifting

Shifting problem consists of sequence in which the elements are shifted from one position to other according to a certain set of rules/patterns.

To understand the concept of shifting, lets take an example

Input Brook Crazy Gathy Omar here Canny.

Now, this input is passed through a machine and following steps are obtained.

Step I Brook Omar Gathy Crazy here Canny
Step II Brook Omar here Crazy Gathy Canny
Step III Canny Omar here Crazy Gathy Brook
Step IV Canny Crazy here Omar Gathy Brook
Step V Canny Crazy Gathy Omar here Brook
Step VI Brook Crazy Gathy Omar here Canny

The shifting of element can easily be understood by marking them equivalent to numbers like

Brook = 1 Crazy = 2 Gathy = 3 Omar = 4
here = 5 Canny = 6

Now, input can be written as 1 2 3 4 5 6

- On moving to Step I, place of words at 2 and 4 gets interchanged.
- On moving to Step II from Step I place of words at 3 and 5 gets interchanged.
- On moving to Step III from Step II, place of words at 1 and 6 gets interchanged.
- After this Step IV, Step V and Step VI are repeated as Steps I, II and III respectively and finally in the Step VI the original input is obtained.

In shifting problems the arrangement of elements are limited to specific movements. The last step of any input-output problem based on shifting is that step, which is given as the last step. A candidate cannot consider on his own any step as the last step.

K Memory *Add-ons*

- In shifting problems, the previous step of any step can possibly be determined, so we can move in backward or reverse order which is not possible in some of the other types of problems.
- In these problems, the shifting can be various types and can involve various steps, so to conclude all such steps would not be possible, some examples are given below to have a more clear idea about the type of questions asked in exam.

Directions (Example Nos. 1-5) Study the following information carefully and answer the questions given below it.

The admission ticket for an exhibition bears a password which is changed after every clock hour based on set of words chosen for each day. The following is an illustration of the code and steps of rearrangement for subsequent clock hours. The time is 9 am to 3 pm.

Batch I (9 am to 10 am)	is not ready cloth simple harmony burning
Batch II (10 am to 11 am)	ready not is cloth burning harmony simple
Batch III (11 am to 12 noon)	cloth is not ready simple harmony burning
Batch IV (12 noon to 1 pm)	not is cloth ready burning harmony simple
Batch V (1 pm to 2 pm) and so on	ready cloth is not simple harmony burning.

Ex **1** If the password for batch I was ...... 'rate go long top we let have', then which batch will have the password .... 'go rate top long have let we'?

(a) II (b) III (c) IV (d) V (e) None of these

Ex **2** Day's first password ..... 'camel road no toy say me not'. What will be the password for fourth batch, *i.e.*, 12 noon to 1 pm?

(a) road camel toy no not me say
(b) no road camel toy not me say
(c) toy no road camel not me say
(d) toy camel road no say me not
(e) None of these

Ex **3** If batch II has the password ...... 'came along net or else key lot', then what could be the password for batch IV *i.e.*, 12 noon to 1 pm?

(a) net or cams along else key lot
(b) came or net along lot key else
(c) or net along came lot key else
(d) along net or came else key lot
(e) None of these

Ex **4** If the password for 11 am to 12 noon was ..... 'soap shy miss pen yet the she', then what was the password for Batch I?

(a) pen miss shy soap she the yet
(b) shy miss pen soap yet the she
(c) soap pen miss shy she the yet
(d) miss shy soap pen she the yet
(e) None of these

Ex **5** If the password for batch VI, *i.e.*, 2 pm to 3 pm is .... 'are trap cut he but say lap', then what will be the password for batch II, *i.e.*, 10 to 11 am?

(a) trap are he cut lap say but
(b) he cut trap are lap say but
(c) cut he are trap but say lap
(d) are he cut trap lap say but
(e) None of these

Solutions (Example Nos. 1-5)

In the above questions a set of words is given as password for the admission in the exhibition at different time intervals.

Different steps followed in change of password for different batches is understood as follows

Mark each word with a suitable number for reference to track the method of shifting used in various steps.

is ⟶ 1, not ⟶ 2, ready ⟶ 3, cloth ⟶ 4, simple ⟶ 5, harmony ⟶ 6, burning ⟶ 7

Now,

First step *i.e.,* Batch I						
is	not	ready	cloth	simple	harmony	burning
1	2	3	4	5	6	7
Second step *i.e.,* Batch II						
3	2	1	4	7	6	5
Third step *i.e.,* Batch III						
4	1	2	3	5	6	7

∴ **Batch II** First three and last three words of the previous batch are written in reverse order.

Batch III First four and last three words of the previous batch are written in reverse order.

These two patterns are repeated alternately for generating pass codes for the subsequent batches.

∴ The complete sets of pass code with number representation can be written as follows

Batch I (9 am to 10 am)

1 2 3 4 5 6 7

Batch II (10 am to 11 am)

3 2 1 4 7 6 5

Batch III (11 am to 12 noon)

4 1 2 3 5 6 7

Batch IV (12 noon to 1 pm)

2 1 4 3 7 6 5

Batch V (1 pm to 2 pm)

3 4 1 2 5 6 7

Batch VI (2 pm to 3 pm)

1 4 3 2 7 6 5

1. (*c*) In this question the code for batch I is given and it is asked to find the batch number with which the other password belongs or the password is of which batch.

Now, we should first mark each word with a number then we can easily find the batch for the given password.

∴ Batch I

rate	go	long	top	we	let	have
1	2	3	4	5	6	7
Now, given password is						
go	rate	top	long	have	let	we
2	1	4	3	7	6	5

Therefore, required password is for batch IV.

2. (*a*) Again, the password for first batch is given and it is asked to calculate the password for batch IV. So, we first mark each word with a number then we can easily find the code for batch IV.

Batch I (9 am to 10 am)

camel	road	no	toy	say	me	not
1	2	3	4	5	6	7

So, Batch IV (12 noon to 1 pm)

road	camel	toy	no	not	me	say
2	1	4	3	7	6	5

3. (*d*) Here password for batch II is given as

Batch II (10 am to 11 am)

came	along	net	or	else	key	lot
3	2	1	4	7	6	5

So, Batch IV (12 noon to 1 pm)

along	net	or	came	else	key	lot
2	1	4	3	7	6	5

4. (*b*) Here, password for batch III is given and to find the password for batch I, we have to move in reverse direction. Now, this can be done by marking it with the use of numbers as done in original password.

Batch III (11 am to 32 noon)

soap	shy	miss	pen	yet	the	she
4	1	2	3	5	6	7

So, Batch I password is obtained as

shy	miss	pen	soap	yet	the	she
1	2	3	4	5	6	7

5. (*c*) Batch VI password marked with numbers is written as

Batch VI (2 pm to 3 pm)

are	trap	cut	he	but	say	lap
1	4	3	2	7	6	5

So, password for batch II (10 am to 11 am) will be

cut	he	are	trap	but	say	lap
3	2	1	4	7	6	5

Practice Corner **18.1**

Build your Confidence...

Directions (Q. Nos. 1-5) Read the information carefully and answer the questions given below. A word rearrangement machine when given an input line of words, rearranges them following a particular rule in every step. The following is an illustration of input and the steps of rearrangement.

Input Sachin's shots are really hot in cricket
Step I Sachin's in are really hot shots cricket
Step II Really are in Sachin's cricket shots hot
Step III in are really hot shots cricket Sachin's
Step IV in cricket really hot shots are Sachin's
Step V hot really cricket in Sachin's are shots.

The further steps go on in the same manner.
As per the pattern followed in the above steps. Find the appropriate step for the given input or *vice-versa* in questions given below

1. Input 'team sudden now to act police staff'. Which of the following steps would be 'police staff to act sudden now team'?

(a) Step I (b) Step II (c) Step III (d) Step IV
(e) None of these

2. If Step IV of an input is 'none of the politicians have toured India', find the Step VI.

(a) have politicians none the toured India of
(b) India politicians have toured the none of
(c) have the none politicians toured India of
(d) India have politicians none of the toured
(e) None of these

3. **Input** 'Most of the politicians were given ultimatum'.
Which of the following will be the Step IV for the given input?

(a) ultimatum were given the most politicians of
(b) the politicians of most were given ultimatum
(c) ultimatum given were the politicians most of
(d) given ultimatum politicians were of the most
(e) None of the above

4. If Step V of an input is 'no of the has happy at all', then which of the following will definitely be the input?

(a) happy all at of no has the
(b) all at happy no of has the
(c) the has no of at all happy
(d) cannot be determined
(e) None of these

5. If Step I of an input is 'in the four of three be serious', find out the VII step of that input.

(a) serious in three be four of the
(b) in the three be four of serious
(c) serious in three be the of four
(d) cannot be determined
(e) None of the above

Directions (Q.Nos. 6-10) Read the information carefully and answer the questions given below. A word and number arrangement machine when given a particular input, rearranges it following a particular rule. The following is the illustration of input and the steps of arrangement.

Input 15 give not hot 45 33 for
Step I for give not hot 45 33 15
Step II for not give hot 33 45 15
Step III 15 not give hot 33 45 for
Step IV 15 give not hot 45 33 for
Step V for give not hot 45 33 15

6. If '19 36 43 50 31 22 25' is the input, then find out the Step IV.

(a) 43 19 36 50 31 22 25
(b) 25 22 31 50 43 36 19
(c) 50 31 22 25 43 36 19
(d) 19 36 43 50 31 22 25
(e) None of these

7. If 'rat cat fat chat that hat mat' is the Step II, then what would be the input?

(a) mat fat cat chat hat that rat
(b) chat mat fat cat rat that hat
(c) fat mat chat cat rat hat that
(d) that hat rat cat chat mat fat
(e) None of these

8. If input is '16 nine 32 ten two five six', then find Step V.

(a) 32 ten two five 16 nine six
(b) 32 six ten two five 16 nine
(c) six nine 32 ten two five 16
(d) 16 five two ten 32 nine six
(e) None of these

9. We have Step V as '24 99 100 121 fine wine dine', then what would be the Step II?

(a) 24 100 99 121 wine fine dine
(b) dine fine wine 24 100 99 121
(c) wine fine dine 24 100 99 121
(d) 121 99 100 24 dine fine wine
(e) None of these

10. Step III '39 40 41 59 35 tap map'. Find the input.

(a) map 41 40 59 tap 35 39
(b) 39 35 tap 59 40 41 map
(c) tap 41 40 59 map 35 39
(d) tap map 39 35 59 40 41
(e) None of these

Directions (Q. Nos. 11-15) Read the information carefully and anser the questions given below. A word arrangement machine, when given an input line of words, rearranges them following a particular rule in each step. The following is the illustration of the input and the steps of arrangement.

Input Dhoni cannot but feel sorry for him
Step I but cannot Dhoni sorry feel him for
Step II cannot but feel sorry Dhoni for him
Step III but cannot sorry feel him for Dhoni
Step IV sorry cannot but him feel Dhoni for

and so on for subsequent steps. You have to find out the logic and answer the questions given below.

11. If Step V read "weeks of tepid slothful and weak ideas", then what would Step IV read?

(a) ideas weeks and tepid of weak slothful
(b) of weeks and slothful tepid ideas weak
(c) of tepid slothful ideas weak and weeks
(d) ideas and tepid weeks of weak slothful
(e) None of these

12. If Step I read "it was the name bestowed upon him", then what would be the arrangement for Step VII?

(a) bestowed it was the name upon him
(b) him it name bestowed the was upon
(c) it was him the name bestowed upon
(d) upon the him was it bestowed name
(e) None of the above

13. If Step VI reads "workers must take a stand against working", then what will be the last word of step III?

(a) workers
(b) must
(c) take
(d) a
(e) None of the above

14. If Step III reads "the best way of promoting our sports", then what will be the arrangement of the input?

(a) best the sports way of our promoting
(b) our promoting the best sports way of
(c) sports best the of way our promoting
(d) of our best the way sports promoting
(e) None of the above

15. If the given input is "it is good approach with care", then what will be Step IV?

(a) with approach it is a good care
(b) approach is a care good it with
(c) a good approach it is with care
(d) care with a good approach is it
(e) None of the above

Directions (Q. Nos. 16-21) Read the following information carefully and answer the questions given below. A famous museum issues entry passes to all its visitors for security reasons. Visitors are allowed in batches after every one hour. In a day there are six batches. A code is printed on entry pass which keeps on changing for every batch. Following is an illustration of passcodes issued for each batch.

Batch I houses neat and clean liked are all by
Batch II by houses neat all are and clean liked
BatchIII liked by houses clean and neat all are and so on

16. If passcode for the third batch is 'you succeed day and hard work to for', then what will be the passcode for the sixth batch?

(a) work hard to for succeed you and day
(b) hard work for and succeed you to day
(c) work hard for to succeed you and day
(d) hard work for to succeed you and day
(e) None of the above

17. If 'visit in 15 should the we time 40' is the passcode for the fifth batch, '15 we the should visit 40 time in' will be the passcode for which of the following batches?

(a) II
(b) IV
(c) I
(d) III
(e) VI

18. Naman visited the museum in the fourth batch and was issued a passcode 'to one rush avoid not do very run'. What would have been the passcode for him had he visited the museum in the second batch?

(a) rush do not avoid to run very one
(b) rush not do avoid to run very one
(c) avoid rush not do to run very one
(d) Data inadequate
(e) None of the above

19. Kamal went to visit the museum in the second batch. He was issued a passcode 'length the day equal of an night are'. However, he could not visit the museum in the second batch as he was a little late. He, then preferred to visit in the fourth batch. What will be the new passcode issued to him?

(a) and of are night the length equal day
(b) and are of night the length equal day
(c) and of are night the equal day length
(d) and of are the night length day equal
(e) None of these

20. If passcode for the second batch is 'to come hard you did work and success', then what will be the passcode for the fourth batch?

(a) did success to you hard come and work
(b) did success you to hard come and work
(c) did success to you hard come work and
(d) did to success you hard come and work
(e) None of the above

21. If the passcode issued for the last (sixth) batch is the pencil by all boys used are pen', then what will be the passcode for the first batch?

(a) pencil the pen are used by all boys
(b) pen the pencil used are by all boys
(c) pen the pencil are used by all boys
(d) pencil the pen are used all by boys
(e) None of the above

Response & Interpretations **(18.1)**

Solutions (Q. Nos. 1-5)

Let reference chart be Sachin's = 1 shots = 2 are = 3 really = 4
hot = 5 in = 6 cricket = 7

Replacing words with digits, we get

Input	1	2	3	4	5	6	7
Step I	1	6	3	4	5	2	7
Step II	4	3	6	1	7	2	5
Step III	6	3	4	5	2	7	1
Step IV	6	7	4	5	2	3	1
Step V	5	4	7	6	1	3	2
Step VI	7	4	5	2	3	1	6
Step VII	7	1	5	2	3	4	6

1. (*d*) Given, **Input**

team	sudden	now	to	act	police	staff
↓	↓	↓	↓	↓	↓	↓
1	2	3	4	5	6	7

Then, the given step

police	staff	to	act	sudden	now	team
↓	↓	↓	↓	↓	↓	↓
6	7	4	5	2	3	1

From reference chart,
Step IV 6, 7, 4, 5, 2, 3, 1

2. (*b*) Here Step IV follows, the same process of shifting as Step I follows from the input So Step IV can be considered as first step and then process of shifting can be done.

Step IV → Step I

none	of	the	politicians	have	toured	India
↓	↓	↓	↓	↓	↓	↓
1	6	3	4	5	2	7

Now, from reference chart (taking digits for Step VI and putting words for them)

Step VI

7	4	5	2	3	1	6
↓	↓	↓	↓	↓	↓	↓
India	politicians	have	toured	the	none	of

3. (*d*) Given, **Input**

Most	of	the	politicians	were	given	ultimatum
↓	↓	↓	↓	↓	↓	↓
1	2	3	4	5	6	7

Then, **Step IV**

6	7	4	5	2	3	1
↓	↓	↓	↓	↓	↓	↓
given	ultimatum	politicians	were	of	the	most

4. (*a*) Given, **Step V**

no	of	the	has	happy	at	all
↓	↓	↓	↓	↓	↓	↓
5	4	7	6	1	3	2

Now, **Input**

1	2	3	4	5	6	7
↓	↓	↓	↓	↓	↓	↓
happy	all	at	of	no	has	the

5. (*a*) Given, **Step I**

in	the	four	of	three	be	serious
↓	↓	↓	↓	↓	↓	↓
1	6	3	4	5	2	7

Now, from reference chart (taking digits for step VII for replacing them with appropriate words)

Step VII

7	1	5	2	3	4	6
↓	↓	↓	↓	↓	↓	↓
serious	in	three	be	four	of	the

Solutions (Q. Nos. 6-10) *Let reference chart be*

15 = 1 give = 2 not = 3 hot = 4 45 = 5 33 = 6 for = 7

Input	1	2	3	4	5	6	7
Step I	7	2	3	4	5	6	1
Step II	7	3	2	4	6	5	1
Step III	1	3	2	4	6	5	7
Step IV	1	2	3	4	5	6	7
Step V	7	2	3	4	5	6	1

6. (*d*) Given, **Input**

19	36	43	50	31	22	25
↓	↓	↓	↓	↓	↓	↓
1	2	3	4	5	6	7

Now, from reference chart, taking the digits for Step IV and replacing them with numbers.

Step IV

1	2	3	4	5	6	7
↓	↓	↓	↓	↓	↓	↓
19	36	43	50	31	22	25

7. (*a*) Given, **Step II**

rat	cat	fat	chat	that	hat	mat
↓	↓	↓	↓	↓	↓	↓
7	3	2	4	6	5	1

∴ **Input**

1	2	3	4	5	6	7
↓	↓	↓	↓	↓	↓	↓
mat	fat	cat	chat	hat	that	rat

8. (*c*) Given, **Input**

16	nine	32	ten	two	five	six
↓	↓	↓	↓	↓	↓	↓
1	2	3	4	5	6	7

∴ **Step V**

7	2	3	4	5	6	1
↓	↓	↓	↓	↓	↓	↓
six	nine	32	ten	two	five	16

9. (*a*) Given, **Step V**

24	99	100	121	fine	wine	dine
↓	↓	↓	↓	↓	↓	↓
7	2	3	4	5	6	1

∴ **Step II**

7	3	2	4	6	5	1
↓	↓	↓	↓	↓	↓	↓
24	100	99	121	wine	fine	dine

10. (*e*) Given, **Step III**

39	40	41	59	35	tab	map
↓	↓	↓	↓	↓	↓	↓
1	3	2	4	6	5	7

∴ **Input**

1	2	3	4	5	6	7
↓	↓	↓	↓	↓	↓	↓
39	41	40	59	tap	35	map

Solutions (Q. Nos. 11-15) *Let reference chart be*

Dhoni = 1 cannot = 2 but = 3 feel = 4 sorry = 5 for = 6 him = 7

Input	1	2	3	4	5	6	7
Step I	3	2	1	5	4	7	6
Step II	2	3	4	5	1	6	7
Step III	3	2	5	4	7	6	1
Step IV	5	2	3	7	4	1	6
Step V	2	5	4	7	3	6	1
Step VI	5	2	7	4	1	6	3
Step VII	7	2	5	1	4	3	6

11. (*b*) Given, **Step V**

weaks	of	tepid	slothful	and	weak	ideas
↓	↓	↓	↓	↓	↓	↓
2	5	4	7	3	6	1

∴ **Step IV**

5	2	3	7	4	1	6
↓	↓	↓	↓	↓	↓	↓
of	weaks	and	slothful	tepid	ideas	weak

12. (*e*) Given, **Step I**

it	was	the	name	bestowed	upon	him
↓	↓	↓	↓	↓	↓	↓
3	2	1	5	4	7	6

∴ **Step VII**

7	2	5	1	4	3	6
↓	↓	↓	↓	↓	↓	↓
upon	was	name	the	bestowed	it	him

13. (*e*) Given, **Step VI**

workers	must	take	a	stand	against	working
↓	↓	↓	↓	↓	↓	↓
5	2	7	4	1	6	3

∴ **Step III**

3	2	5	4	7	6	1
↓	↓	↓	↓	↓	↓	↓
working	must	workers	a	take	against	stand
						↑
						Last word

14. (*c*) Given, **Step III**

the	best	way	of	promoting	our	sports
↓	↓	↓	↓	↓	↓	↓
3	2	5	4	7	6	1

∴ **Input**

1	2	3	4	5	6	7
↓	↓	↓	↓	↓	↓	↓
sports	best	the	of	way	our	promoting

15. (*b*) Given, **Input**

it	is	a	good	approach	with	care
↓	↓	↓	↓	↓	↓	↓
1	2	3	4	5	6	7

∴ **Step IV**

5	2	3	7	4	1	6
↓	↓	↓	↓	↓	↓	↓
approach	is	a	care	good	it	with

Solutions (Q. Nos. 16-21) *Let reference chart be*

houses = 1 neat = 2 and = 3 clean = 4 liked = 5 are = 6 all = 7 by = 8

Batch I	1	2	3	4	5	6	7	8
Batch II	8	1	2	7	6	3	4	5
Batch III	5	8	1	4	3	2	7	6
Batch IV	6	5	8	7	2	1	4	3
Batch V	3	6	5	4	1	8	7	2
Batch VI	2	3	6	7	8	5	4	1

16. (*c*) Given, **Batch III**

you	succeed	day	and	hard	work	to	for
↓	↓	↓	↓	↓	↓	↓	↓
5	8	1	4	3	2	7	6

∴ **Batch VI**

2	3	6	7	8	5	4	1
↓	↓	↓	↓	↓	↓	↓	↓
work	hard	for	to	succeed	you	and	day

17. (*d*) Given, **Batch V**

visit	in	15	should	the	we	time	40
↓	↓	↓	↓	↓	↓	↓	↓
3	6	5	4	1	8	7	2

∴

15	we	the	should	visit	40	time	in
↓	↓	↓	↓	↓	↓	↓	↓
5	8	1	4	3	2	7	6

Batch III

18. (*a*) Given, **Batch IV**

to	one	rush	avoid	not	do	very	run
↓	↓	↓	↓	↓	↓	↓	↓
6	5	8	7	2	1	4	3

Batch II

8	1	2	7	6	3	4	5
↓	↓	↓	↓	↓	↓	↓	↓
rush	do	not	avoid	to	run	very	one

19. (*e*) Given, **Batch II**

8	1	2	7	6	3	4	5
↓	↓	↓	↓	↓	↓	↓	↓
lenght	the	day	equal	of	an	night	are

Batch IV

6	5	8	7	2	1	4	3
↓	↓	↓	↓	↓	↓	↓	↓
of	are	length	equal	day	the	night	an

20. (*a*) Given, **Batch II**

to	come	hard	you	did	work	and	success
↓	↓	↓	↓	↓	↓	↓	↓
8	1	2	7	6	3	4	5

Batch IV

6	5	8	7	2	1	4	3
↓	↓	↓	↓	↓	↓	↓	↓
did	success	to	you	hard	come	and	work

21. (*c*) Given, **Batch VI**

the	pencil	by	all	boys	used	are	pen
↓	↓	↓	↓	↓	↓	↓	↓
2	3	6	7	8	5	4	1

∴ **Batch I**

1	2	3	4	5	6	7	8
↓	↓	↓	↓	↓	↓	↓	↓
pen	the	pencil	are	used	by	all	boys

Type 2 Problems Based on Arrangement

In such problems, words or numbers or both are arranged. Words are arranged alphabetically while numbers are arranged in their increasing or decreasing order. The possible ways of arrangement given below will give you a better idea about the possible ways of arrangements.

Possible Ways of Arrangements

There can be different possible ways of arrangement, some of which are explained here with supportive examples

(a) **From Left** In such arrangement, the given words in the input get arranged from left side according to their arrangement in the dictionary. In other words, we can say that while arranging words in the given input, we put the first word of the dictionary in the first place (this would be Step I). In Step II, the 2nd word of the dictionary is put at the second place and so on. In this way, in succeeding steps, the 1st, 2nd, 3rd, 4th, ... places from left are filled by alphabetically 1st, 2nd, 3rd, 4th, ...words.

e.g., **Input** Sachin Dhoni Zaheer Kumble Virat
Step I Dhoni Sachin Zaheer Kumble Virat
Step II Dhoni Kumble Sachin Zaheer Virat
Step III Dhoni Kumble Sachin Virat Zaheer

➘ Words in the given input can also be arranged by putting the 1st word of the dictionary at the 1st place from left, 2nd word at the second place from left, 3rd word at the third place from left and so on.

(b) **From Right** In such arrangement words get arranged from right side according to their arrangement in the dictionary. In other words, we can say that with the words in the given input, we put the last word of the dictionary at the 1st place from right (this would be Step I). Then, in Step II, the second last word of the dictionary is put at the second place from right and so no. In this way, in succeeding steps, the 1st, 2nd, 3rd, 4th, ... steps from right, are filled by alphabetically last, 2nd last, 3rd last, 4th last, ... words.

e.g., **Input** Dhoni is the best Indian captain.
Step I Dhoni is best Indian captain the
Step II Dhoni best Indian captain is the
Step III Dhoni best captain Indian is the
Step IV Best captain Dhoni Indian is the

➘ Words in the given input can also be arranged by putting the last word of the dictionary at the 1st place from right, 2nd last word at the 2nd place from right, 3rd last word at the third place from right and so on.

(c) **Left-Right Alternate Arrangement** In such arrangement, we first put alphabetically first word at the first place from left (this would be Step I), then we put alphabetically last word at the last place, then alphabetically second word at the second place from left ... and so on. In other words, word in the given input are placed from the left and from the right alternatively.

e.g., **Input** Kohli is the most talented batsman.
Step I batsman Kohli is the most talented
Step II batsman Kohli is most talented the
Step III batsman is Kohli most talented the

➘ Words in the given input can also be arranged by putting alphabetically 1st word at the first place from left, then by putting alphabetically last word at the last place, then alphabetically 2nd word at the second place from left ... and so on.

(d) **Increasing/Decreasing Arrangement of Numbers** In such arrangement numbers in the given input are arranged in their increasing/decreasing order

e.g., **Input** 18 5 70 25
Step I 5 18 70 25
Step II 5 18 25 70

e.g., **Input** 18 5 70 25
Step I 70 18 5 25
Step II 70 25 18 5

(e) **Left-Right Alternate Arrangement of Numbers** In such arrangement, we first put smallest number at the first place from left; then we put largest number at the last place, then we put second smallest number at the second place from left and so on. In other words, numbers in the given input are placed from the left and from the right alternatively.

e.g., **Input** 370 118 200 75 90
Step I 75 370 118 200 90
Step II 75 118 200 90 370
Step III 75 90 118 200 370

➘ Numbers in the given input can also be arranged by putting smallest number at the 1st place from left, then largest number at the last place, then second smallest number at the 2nd place from left and so on.

(f) **Arrangement of Word and Numbers Simultaneously** In such arrangement words and numbers both are given in the input and their arrangement can be understood by the following cases

***Case* I** *e.g.,* **Input** Name Game fame 25 10 90
Step I 10 Name Game Fame 25 90
Step II 10 Fame Name Game 25 90
Step III 10 Fame 25 Name Game 90
Step IV 10 Fame 25 Game Name 90
Step V 10 Fame 25 Game 90 Name

Clearly, in Step I, least number comes at the first place from left, then in Step II, the word coming first alphabetically takes second place from left, then in Step III, the number greater than the least number (25 in this case) takes place at the third place from left; again in Step IV, the word coming second alphabetically at the fourth place from left and further steps go on in the same manner till all the numbers and words in the given input get arranged.

➘ Such arrangement may take place from right side also.

***Case* II** *e.g.,*
Input Name Game Fame 25 10 90
Step I Fame Name Game 25 10 90
Step II Fame 10 Name Game 25 90
Step III Fame 10 Game Name 25 90
Step IV Fame 10 Game 25 Name 90

Clearly, in Step I, word coming first alphabetically, takes first place from left, then in Step II, the least number takes 2nd place from left, then in Step II, the word coming second alphabetically takes third place from left, then in Step IV, the number greater than least number takes 4th place from left and further steps go on in the same manner till all the numbers and words in the given input get arranged.

➘ Such arrangement may take place from right side also.

***Case* III** *e.g.,*
Input Game Name Fame 25 10 90
Step I 90 Game Name Fame 25 10
Step II 90 Name Game Fame 25 10
Step III 90 Name 25 Game Fame 10
Step IV 90 Name 25 Game 10 Fame

Clearly, in case III the arrangement goes from left like largest number, then alphabetically last word, then second largest number, then alphabetically second last word and so on.

➘ Such arrangement may take place from right side also.

***Case* IV** *e.g.,*
Input Game Name Fame 25 10 90
Step I Name Game Fame 25 10 90
Step II Name 90 Game Fame 25 10
Step III Name 90 Game 25 Fame 10

Clearly, in case IV, the arrangement goes from left side like alphabetically last word, then largest number, then alphabetically second last word, then second largest number and so on.

➘ Such arrangement may take place from right side also.

Apart from all the four cases discussed above, students must be prepared to face some unexpected and surprising cases sometimes.

K Memory *Add-ons*

- In the problems of arrangement, the previous step can never be determined. Suppose we are given Step IV and then asked to find Step III/Step II/Step I/Input, then do not waste your time and choose the answer choice 'cannot be determined'.
- If there are n words or numbers, then the word arrangement machine will take atmost $(n-1)$ steps to finish the arrangement ***e.g.,*** If a given input has 8 words (or numbers), then to get arranged, it will take atmost $(8-1)=7$ steps.
- To find any step (say x) for given input mentally pickup the 1st x alphabetical words (or numbers in increasing order) and just place them before the remaining words (or numbers). This is the case when
  (a) words are in forward alphabetical order (A ⟶ Z)
  or
  (b) numbers are in increasing order.
  But point to be noted that when words are given in backward alphabetical order (Z ⟶ A) and numbers are given in decreasing order, then we consider last x words or numbers.

Directions (Example.Nos. 6 -10) A word arrangement machine when given an input line of words, rearranges them following a particular rule in each step. The following is the illustration of the input and the steps of arrangement.

Input vani is the most beautiful girl on earth
Step I beautiful vani is the most girl on earth
Step II beautiful earth vani is the most girl on
Step III beautiful earth girl vani is the most on
Step IV beautiful earth girl is vani the most on
Step V beautiful earth girl is most vani the on
Step VI beautiful earth girl is most on vani the
Step VII beautiful earth girl is most on the vani

Since the words are already arranged, the machine stops after this step. Otherwise the machine may carry on its logic until the words get fully arranged. *Study the logic and answer the questions that follow*

Ex **6** **Input** 'is you are again famous on this'. Find the Step III.
(a) again are famous is you on this (b) on this you is famous are again (c) this on you is famous are again
(d) famous this on you is are again (e) None of these

Ex **7** If given, Step IV 'option pen rose Seema tape yolk', what will be the input?
(a) pen option rose tape Seema yolk (b) yolk Seema tape rose option pen
(c) tape Seema yolk rose option pen (d) Cannot be determined
(e) None of these

Ex **8** **Input** 'no gum to sum fame game'. Find the Step I.
(a) game no gum to sum fame (b) gum no to sum fame game (c) game gum no to sum fame
(d) Cannot be determined (e) None of these

Ex **9** **Input** 'He is a great Indian cricketer'. Find out the last step for this input.
(a) VII (b) VI (c) IV
(d) Cannot be determined (e) None of these

Ex **10** **Input** 'when men ten gain rain'. What would be the second step for this input?
(a) gain when men ten rain (b) gain men when ten rain (c) rain ten men when gain
(d) Cannot be determined (e) None of these

Solutions (Example Nos. 6-10) *In this problem we notice*
(i) it is a forward order alphabetical arrangement. (ii) arrangement takes place from left side only.

6. (*a*) **Input** 'is you are again famous on this'
Step I again is you are famous on this
Step II again are is you famous on this
Step III again are famous is you on this

Hence, option (a) is the correct answer.

Quicker Method

Applying 'Rule D', we pick first three words in forward alphabetical order (again, are, famous) and place them before the remaining words that gives.

Step III again are famous is you on this

7. (*d*) Option (d) is the correct answer as in the arrangement problem previous steps cannot be determined. (see Rule B)

8. (*e*) **Input** no gum to sum fame game
Step I fame no gum to sum game
Hence, option (e) is the correct answer.

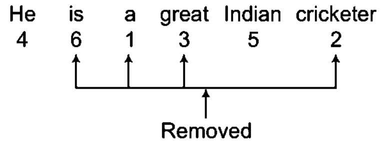
9. (*c*) **Input** He is a great Indian cricketer
Step I a He is great Indian cricketer
Step II a cricketer he is great Indian
Step III a cricketer great he is Indian
Step IV a cricketer great he Indian is
Hence, option (c) is correct.

Quicker Method

The complete arrangement will take atmost 6 – 1 = 5 steps

So, it is very much clear that total steps will be either 5 or less. Thus, this rule automatically rejects option (a) and (b) and option (d) will also be rejected.

By 'Rule E'



Clearly, after removing 1, 2, 3 and 6 (four words) the remaining words come in order.

Hence, total steps = 4 ∴ last step = IV

10. (*b*) **Input** when men ten gain rain
Step I gain when men ten rain
Step II gain men when ten rain
Hence, option (b) is correct.

Practice Corner **18.2**

Build your Confidence...

Directions (Q.Nos. 1-6) Study the following information carefully and answer the given questions. A word and number arrangement machine when given an input line of words and numbers rearranges them following a particular rule in each step. The following is an illustration of input and rearrangement. **[IBPS (PO) 2011]**

Input 'gone 93 over 46 84 now for 31'
Step I 31 gone 93 over 46 84 now for
Step II 31 over gone 93 46 84 now for
Step III 31 over 46 gone 93 84 now for
Step IV 31 over 46 now gone 93 84 for
Step V 31 over 46 now 84 gone 93 for

and Step V is the last step of the rearrangement of the above input.

As per the rules followed in the above steps, find out in each of the following questions the appropriate step for the given input.

1. **Step III** of an input 15 window 29 93 86 sail tower buy
Which of the following will be Step VI?
(a) 15 window 29 tower 86 sail 93 buy
(b) 15 window 29 tower 86 93 sail buy
(c) 15 window 29 tower 93 86 sail buy
(d) There will be no such step
(e) None of the above

2. **Input** 'station hurry 39 67 all men 86 59'
How many steps will be required to complete the rearrangement?
(a) Four (b) Five (c) Six (d) Three
(e) None of these

3. **Step II** of an input is 49 zone car battery 56 87 71 down
Which of the following is definitely the input?
(a) car 49 battery zone 56 87 71 down
(b) zone 49 car battery 56 87 71 down
(c) battery car 49 zone 56 87 71 down
(d) Cannot be determined
(e) None of the above

4. **Input** 'news 79 53 glory for 46 29 task'
Which of the following will be step IV?
(a) 29 task 46 news 53 glory 79 for
(b) 29 task 46 news 53 79 glory for
(c) 29 task 46 news 79 53 glory for
(d) 29 news 79 53 glory for 46 task
(e) None of the above

5. **Step III** of an input is 27 tube 34 gas chamber row 74 53
Which of the following steps will be the last but one?
(a) VI (b) VII
(c) VIII (d) V
(e) None of these

6. **Step II** of an input is 19 years 85 74 near gone 26 store
How many more steps will be required to complete the rearrangement?
(a) Three (b) Four
(c) Two (d) Five
(e) None of these

Directions (Q.Nos 7-10) Study the following information carefully and answer the given questions. A word and number arrangement machine when given an input line of words and numbers rearranges them following a particular rule in each step. The following is an illustration of input and rearrangement. **[UCO Bank (PO) 2010]**

Input 'sale data 18 23 for 95 then 38'
Step I data sale 18 23 for 95 then 38
Step II data 95 sale 18 23 for then 38
Step III data 95 for sale 18 23 then 38
Step IV data 95 for 38 sale 18 23 then
Step V data 95 for 38 sale 23 18 then
Step VI data 95 for 38 sale 23 then 18

and step VI is the last step of the rearrangement of the above input.
As per the rules followed in the above steps, find out in each of the following questions the appropriate step for the given input.

7. **Input** 'year 39 stake 47 house full 94 55'
How many steps will be required to complete the rearrangement?

(a) Five (b) Six (c) Four (d) Seven
(e) None of these

8. **Step II** of an input is car 83 lost ever 32 46 74 now
How many more steps will be required to complete the rearrangement?

(a) Three (b) Four
(c) Five (d) Six
(e) None of these

9. **Step III** of an input is and 79 code 27 18 new goal 34
Which of the following will definitely be the input?

(a) code and 79 27 18 new goal 34
(b) code 27 18 new goal 34 and 79
(c) code 27 and 18 79 new goal 34
(d) Cannot be determined
(e) None of the above

10. **Input** 'water full never 35 78 16 height 28'
Which of the following steps will be the last?

(a) VI (b) VII (c) VIII (d) IX
(e) None of these

Directions (Q.Nos. 11-14) Study the following information to answer the given questions. A word arrangement machine, when given an input line of words, rearranges them following a particular rule in each step. The following is an illustration of input and the steps of rearrangement.

Input 'As if it on as zoo figure Of in at'
Step I as As if it on zoo figure Of in at
Step II as As at if it on zoo figure Of in
Step III as As at figure if it on zoo Of in
Step IV as As at figure if in it on zoo Of.
Step V as As at figure if in it Of on zoo

and Step V is the last step for this input.
As per the rules followed in the above steps, find out in the questions below, the appropriate steps for the given input.

11. **Input** 'you are at fault on this'—Which of the following steps would be 'are at fault on you this'?

(a) I (b) II (c) III (d) IV
(e) V

12. **Input** 'am ace all if Is'—Which of the following will be the IInd step?

(a) all am ace if Is
(b) ace all am Is if
(c) ace all am if Is
(d) Is if am ace all
(e) None of the above

13. If IVth step is 'an apple at cot was red on one side'—Which of the following will definitely be the input?

(a) apple at an cot was red on one side
(b) cot an at apple was red on one side
(c) was cot red an on at one apple side
(d) Cannot be determined
(e) None of the above

14. **Input** 'Him and His either of her', which step will be the last step for this input?

(a) I (b) II (c) III (d) V
(e) VII

Directions (Q.Nos. 15-19) Study the following information carefully and answer the given questions. A word and number arrangement machine when given an input line of words an numbers rearranges them following a particular rule in each step. The following is an illustration of input and rearrangement. (All the numbers given in the arrangement are two digit numbers **[IBPS (SO) 2012]**

Input 'gone over 35 69 test 72 park 27'
Step I 27 gone over 35 69 test 72 park
Step II 27 test gone over 35 69 72 park
Step III 27 test 35 gone over 69 72 park
Step IV 27 test 35 park gone over 69 72
Step V 27 test 35 park 69 gone over 72
Step VI 27 test 35 park 69 over gone 72
Step VII 27 test 35 park 69 over 72 gone

and Step VII is the last step of the rearrangement of the above input as the desired arrangement is obtained.

As per the rules followed in the above steps, find out in each of the following questions the appropriate step for the given input.

15. **Input** '86 open shut door 31 49 always 45'. How many steps will be required to complete the rearrangement?

(a) Five (b) Six (c) Seven (d) Four
(e) None of these

16. **Step III** of an input is 25 yes 37 enemy joy defeat 52 46 Which of the following is definitely the input?

(a) enemy 25 joy defeat yes 52 37 46
(b) 37 enemy 25 joy yes defeat 52 46
(c) enemy joy defeat 25 52 yes 46 37
(d) Cannot be determined
(e) None of the above

17. **Step II** of an Input is 18 win 71 34 now if victory 61
How many more steps will be required to complete the rearrangement?

(a) Three (b) Four (c) Five (d) Six
(e) More than six

18. **Input** 'where 47 59 12 are they going 39'
Which of the following steps will be the last but one?

(a) VII (b) IV (c) V (d) VIII
(e) None of these

19. **Step II** of an input 33 store 81 75 full of goods 52
Which of the following will be Step VI?

(a) 33 store 52 of 75 81 full goods
(b) 33 store 52 of 75 full 81 goods
(c) 33 store 52 of 75 goods 81 full
(d) There will be no such step
(e) None of the above

Directions (Q.Nos. 20-26) Study the following information carefully to answer the questions given below it. A number sorting machine, when given an input of numbers, rearranges the numbers in a particular manner step by step as indicated below, till all the numbers are arranged in a particular order. Given below is an illustration of this arrangement.

Input	39	121	48	18	76	112	14	45	63	96
Step I	14	39	121	48	18	76	112	45	63	96
Step II	14	18	39	121	48	76	112	45	63	96
Step III	14	18	39	45	121	48	76	112	63	96
Step IV	14	18	39	45	48	121	76	112	63	96

and so on till all the numbers get arranged in ascending order.

20. If following is the fifth step of an input, what will be the third step?

Step V 17, 32, 43, 82, 69, 93, 49, 56, 99, 106

(a) 17, 32, 43, 82, 69, 93, 49, 56, 99, 106
(b) 17, 32, 82, 69, 43, 93, 49, 56, 99, 106
(c) 17, 32, 82, 69, 93, 43, 49, 56, 99, 106
(d) 17, 32, 82, 69, 43, 93, 56, 49, 99, 106
(e) Cannot be determined

21. How many steps will be required for getting the final output for the following input?

Input '101, 85, 66, 49, 73, 39, 142, 25, 115, 74'

(a) 5
(b) 6
(c) 7
(d) 8
(e) None of the above

22. Which of the following will be the third step for the following input?

Input '45, 78, 97, 132, 28, 16, 146, 54, 99, 112'

(a) 16, 28, 45, 78, 97, 146, 54, 99, 112, 132
(b) 16, 28, 45, 97, 78, 54, 99, 112, 132, 146
(c) 16, 28, 45, 78, 97, 132, 54, 99, 112, 146
(d) 16, 28, 45, 97, 78, 132, 99, 54, 112, 146
(e) None of the above

23. If the second step for an input is as given below, what will be the fifth step for the same input?

Step II 22, 49, 32, 88, 69, 132, 101, 185

(a) 22, 32, 49, 88, 69, 101, 132, 185
(b) 22, 32, 69, 49, 88, 101, 132, 185
(c) 22, 32, 49, 69, 101, 88, 132, 185
(d) 22, 32, 49, 88, 69, 132, 101, 185
(e) None of the above

24. What will be the Step II for the following input?

Input '47, 62, 17, 92, 86, 42, 24, 79'

(a) 17, 24, 47, 62, 86, 42, 79, 92
(b) 17, 47, 62, 86, 42, 24, 79, 92
(c) 17, 24, 47, 62, 92, 86, 42, 79
(d) 17, 47, 62, 86, 24, 42, 79, 92
(e) None of the above

25. What will be the last step for the following input?

Input '138 63 49 93 89 122 32 71'

(a) 32, 49, 71, 63, 89, 93, 122, 138
(b) 32, 49, 63, 71, 93, 89, 122, 138
(c) 32, 49, 63, 71, 89, 93, 122, 138
(d) Cannot be determined
(e) None of the above

26. What will be the Step III for the following input?

Input '68, 182, 39, 93, 129, 46, 21, 58'

(a) 21, 39, 68, 93, 129, 46, 58, 182
(b) 21, 39, 68, 129, 93, 46, 58, 182
(c) 21, 68, 39, 93, 129, 46, 58, 182
(d) Cannot be determined
(e) None of the above

Directions (Q.Nos. 27-31) Study the following information carefully to answer the questions below. An electronic device, when Fed with the numbers, rearranges them in a particular order following certain rules. The following is step by step process of rearrangements for the given input of numbers.

Input	75	9	312	55	16	61
Step I	312	9	75	55	16	61
Step II	312	75	9	55	16	61
Step III	312	75	61	55	16	9

For the given input Step III is the last step.

27. **Input** '88 172 15 105 412 25', find Step III of this input.

(a) 172 412 15 105 88 25
(b) 412 172 15 105 88 25
(c) 412 172 105 88 15 25
(d) Cannot be determined
(e) None of these

28. If Step III of an input is as follows
525 175 118 107 112 99 100, then find the input.

(a) 525 118 107 175 112 99 100
(b) 118 525 107 112 175 99 100
(c) 99 100 175 112 107 525 118
(d) Cannot be determined
(e) None of the above

29. **Input** '177 390 85 188 522 765'
What will be the last step for this input?

(a) IV
(b) V
(c) VII
(d) VI
(e) None of these

30. **Step IV** of an input is 832 722 701 645 85 517 615
Find Step II for that input

(a) 832 722 645 701 85 517 615
(b) 832 722 701 85 645 517 615
(c) 832 722 615 517 645 85 701
(d) 832 722 615 85 645 701 517
(e) Cannot be determined

31. **Input** '87 98 77 115 67 220 135'
Find the last output for this input.

(a) 220 135 115 98 87 77 67
(b) 220 135 115 98 77 87 67
(c) 220 135 115 77 98 87 67
(d) Cannot be determined
(e) None of the above

Directions (Q. Nos. 32-36) Study the given information and answer the following questions. When a word and number arrangement machine is given an input line of words and numbers, it arranges them following a particular rule. The following is an illustration of input and rearrangement. (All the numbers are two digit numbers)

Input 40 made butter 23 37 cookies salt extra 52 86 92 fell now 19
Step I butter 19 40 made 23 37 cookies salt extra 52 86 92 fell now
Step II cookies 23 butter 19 40 made 37 salt extra 52 85 92 fell now
Step III extra 37 cookies 23 butter 19 40 made salt 52 86 92 fell now
Step IV fell 40 extra 37 cookies 23 butter 19 made salt 52 86 92 now
Step V made 52 fell 40 extra 37 cookies 23 butter 19 salt 86 92 now
Step VI Now 86 made 52 fell 40 extra 37 cookies 23 butter 19 salt 92
Step VII salt 92 now 86 made 52 fell 40 extra 37 cookies 23 butter 19

Step VII is the last step of the above arrangement as the intended arrangement is obtained.

As per the rules followed in the given steps, find out the appropriate steps for the given input.

Input '32 proud girl beautiful 49 58 97 rich family 61 72 17 nice life'

32. How many steps will be required to complete the given input?

(a) Five
(b) Six
(c) Seven
(d) Eight
(e) Nine

33. Which of the following is the third element from the left end of step VI?

(a) Beautiful
(b) Life
(c) 61
(d) Nice
(e) 17

34. Which of the following is Step III of the given input?

(a) proud 72 girl 48 family 32 beautiful 17 55 97 rich 61
(b) life 55 girl 48 family 32 beautiful 17 proud 97 rich 61 72 nice
(c) girl 48 family 32 beautiful 17 proud 55 97 rich 61 72 nice life
(d) family 32 beautiful 17 proud girl 48 55 97 rich 61 72 nice life
(e) girl 49 life 55 family 32 beautiful 17 proud 97 rich 61 72 nice

35. What is the position of 'nice' from the left end in the final step?

(a) Fifth (b) Sixth (c) Seventh (d) Eighth
(e) Ninth

36. Which element is third to the right of 'family' in Step V?

(a) Beautiful (b) 17 (c) Proud (d) 97
(e) 32

Response & Interpretations **(18.1)**

Solutions. (Q. Nos. 1-6)

In the 1st step, the smallest number comes at the first position from left pushing the rest of the line rightward; in Step II, the word coming last in the alphabetical order comes at the 2nd position from left pushing the rest of the line rightward; in step III, the 2nd smallest number comes at the third place from left pushing rest of the line rightward; in Step IV, the word coming 2nd last in alphabetical order comes at the fourth position from left pushing the remaining line rightward. Thus, number and words get arranged alternately till the numbers are in ascending order and the words are in reverse alphabetical order.

1. (*a*) **Step III** 15 windows 29 93 86 sail tower buy
Step IV 15 window 29 tower 93 86 sail buy
Step V 15 window 29 tower 86 93 sail buy
Step VI 15 window 29 tower 86 sail 93 buy

2. (*b*) **Input** station hurry 39 67 all men 86 59
Step I 39 station hurry 67 all men 86 59
Step II 39 station 59 hurry 67 all men 86
Step III 39 station 59 men hurry 67 all 86
Step IV 39 station 59 men 67 hurry all 86
Step V 39 station 59 men 67 hurry 86 all
As last step = Step V
∴ Total steps = Five

3. (*d*) In arrangement problem, previous steps cannot be determined.

4. (*b*) **Input** news 79 53 glory for 46 29 task
Step I 29 news 79 53 glory for 46 task
Step II 29 task news 79 53 glory for 46
Sep III 29 task 46 news 79 53 glory for
Step IV 29 task 46 news 53 79 glory for

5. (*d*) **Step III** 27 tube 34 gas chamber row 74 53
Step IV 27 tube 34 row gas chamber 74 53
Step V 27 tube 34 row 53 gas chamber 74
Step VI 27 tube 34 row 53 gas 74 chamber
As last step = Step VI
∴ Last but one step = Step V

6. (*b*) **Step II** 19 year 85 74 near gone 26 store
Step III 19 year 26 85 74 near gone store
Step IV 19 year 26 store 85 74 near gone
Step V 19 year 26 store 74 85 near gone
Step VI 19 year 26 store 74 near 85 gone
As total steps = 6, ∴ Required answer = Four

Solutions (Q. Nos. 7-10)

In the Step I, the word coming first alphabetically comes at the 1st place from left pushing the remaining line right word; in Step II, largest number comes at the 2nd position from left pushing the remaining line rightward; in Step III, the word coming second alphabetically comes at the 3rd place from left pushing the remaining line rightward; in Step IV, the 2nd largest number comes at the 4th position from left pushing the remaining line rightward. Thus, word and number get arranged alternately till the words are in forward alphabetical order and the numbers in decreasing order.

7. (*b*) **Input** year 39 stake 47 house full 94 55
Step I Full year 39 stake 47 house 94 55
Step II Full 94 year 39 stake 47 house 55
Step III Full 94 house year 39 stake 47 55
Step IV Full 94 house 55 year 39 stake 47
Step V Full 94 house 55 stake year 39 47
Step VI Full 94 house 55 stake 47 year 39
∴ Required steps = Six

8. (*b*) **Step II** Car 83 lost ever 32 46 74 now
Step III Car 83 ever lost 32 46 74 now
Step IV Car 83 ever 74 lost 46 now 32
Step V Car 83 ever 74 lost 46 32 now
Step VI Car 83 ever 74 lost 32 46 now
∴ Required more steps = Four

9. (*d*) In arrangement problem, previous steps cannot be determined.

10. (*a*) **Input** Water full never 35 78 16 height 28
Step I Full water never 35 78 16 height 28
Step II Full 78 water never 35 16 height 28
Step III Full 78 height water never 35 16 28
Step IV Full 78 height 35 water never 16 28
Step V Full 78 height 35 never water 16 28
Step VI Full 78 height 35 never 28 water 16
∴ Last step = Step VI

Solutions (Q. Nos. 11-14)

Here, each word of the input has been arranged in the alphabetical order giving preference to the word starting with the small letter.

11. (*d*) **Input** you are at fault on this
Step I are you at fault on this
Step II are at you fault on this
Step III are at fault you on this
Step IV are at fault on you this

12. (*c*) **Input** am ace all if Is
Step I ace am all if Is
Step II ace all am if Is

13. (*d*) We cannot determine the input for the given step, as the position of each word cannot definitely be known in the input.

14. (*c*) **Input** Him and His either or her
Step I and Him His either or her
Step II and either Him His or her
Step III and either her Him His or

Solutions (Q. Nos. 15-19)

In Step I, the smallest number comes at the first place from left pushing rest of the line towards right; in Step II, the word coming last alphabetically comes at the second place from left pushing rest of the line towards right; in Step III, second smallest number comes at the third place from left pushing rest of the line towards right; in Step IV, the word coming second last alphabetically comes at the fourth position from left pushing the rest of the line rightward. Thus numbers and words get arranged alternately till the numbers are in ascending order and the words are in reverse alphabetical order.

15. (*b*) **Input** 86 open shut down 31 49 always 45
Step I 31 86 open shut door 49 always 45
Step II 31 shut 86 open door 49 always 45
Step III 31 shut 45 86 open door 49 always
Step IV 31 shut 45 open 86 door 49 always
Step V 31 shut 45 open 49 86 door always
Step VI 31 shut 45 open 49 door 86 always
∴ Total steps = Six

16. (*d*) In the arrangement problems, previous steps/Input cannot be determined.

17. (*b*) **Step II** 18 win 71 34 now if victory 61
Step III 18 win 34 71 now if victory 61
Step IV 18 win 34 victory 71 now if 61
Step V 18 win 34 victory 61 71 now if
Step VI 18 win 34 victory 61 now 71 if
As last step = Step VI
So, after Step II four more steps are required.

18. (*e*) **Input** Where 47 59 12 are they going 39
Step I 12 where 47 59 are they going 39
Step II 12 where 39 47 59 are they going
Step III 12 where 39 they 47 59 are going
Step IV 12 where 39 they 47 going 59 are
∴ Last but one step = Step III

19. (*d*) **Input** 33 store 81 75 full of goods 52
Step I 33 store 52 81 75 full of goods
Sep II 33 store 52 of 81 75 full goods
Step III 33 store 52 of 75 81 full goods
Step IV 33 store 52 of 75 goods 81 full
As last step = Step IV
∴ Step VI is not possible.

Solutions (Q. Nos. 20-26)

In step I, the smallest number comes at the first position from left pushing the remaining line rightward; in Step II, the second smallest number comes at the second position from left pushing the remaining line towards right; in Step III, the third smallest number comes at the third position from left pushing the remaining line towards right. Further steps will be obtained in the same manner till all the words get arranged in ascending order.

20. (*e*) In the arrangement problem, previous steps cannot be determined.

21. (*d*) **Input** 101, 85, 66, 49, 73, 39, 142, 25, 115, 74
Step I 25, 101, 85, 66, 49, 73, 39, 142, 115, 74
Step II 25, 39, 101, 85, 66, 49, 73, 142, 115, 74
Step III 25, 39, 49, 101, 85, 66, 73, 142, 115, 74
Step IV 25, 39, 49, 66, 101, 85, 73, 142, 115, 74
Step V 25, 39, 49, 66, 73, 101, 85, 142, 115, 74
Step VI 25, 39, 49, 66, 73, 74, 101, 85, 142, 115
Step VII 25, 39, 49, 66, 73, 74, 85, 101, 142, 115
Step VIII 25, 39, 49, 66, 73, 74, 85, 101, 115, 142
∴ Final output = Step VIII
∴ Required steps = 8

22. (*e*) **Input** 45, 78, 97, 132, 28, 16, 146, 54, 99, 112
Step I 16, 45, 78, 97, 132, 28, 146, 54, 99, 112
Step II 16, 28, 45, 78, 97, 132, 146, 54, 99, 112
Step III 16, 28, 45, 54, 78, 97, 132, 146, 99, 112

23. (*e*) **Step II** 22, 49, 32, 88, 69, 132, 101, 185
Step III 22, 32, 49, 88, 69, 132, 101, 185
Step IV 22, 32, 49, 69, 88, 132, 101, 185
Step V 22, 32, 49, 69, 88, 101, 132, 185

24. (*c*) **Input** 47, 62, 17, 92, 86, 42, 24, 79
Step I 17, 47, 62, 92, 86, 42, 24, 79
Step II 17, 24, 47, 62, 92, 86, 42, 79

25. (*c*) Last step will be the one in which all the numbers get arranged in ascending order.

26. (*e*) **Input** 68, 182, 39, 93, 129, 46, 21, 58
Step I 21, 68, 182, 39, 93, 129, 46, 58
Step II 21, 39, 68, 182, 93, 129, 46, 58
Step III 21, 39, 46, 68, 182, 93, 129, 58

Solutions (Q.Nos. 27-31)

In step I, the largest number comes at the first place from left interchanging with its replacing number; in Step II, the second largest number comes at the second place from left interchanging with its replacing number. The further steps are obtained in the same manner till all the numbers get arranged in descending order.

27. (*c*) **Input** 88 172 15 105 412 25
Step I 412 172 15 105 88 25
Step II 412 172 105 15 88 25
Step III 412 172 105 88 15 25

28. (*d*) In an arrangement problem, input/previous steps cannot be determined.

29. (*a*) **Input** 177 390 85 188 522 765
Step I 765 390 85 188 522 177
Step II 765 522 85 188 390 177
Step III 765 522 390 188 85 177
Step IV 765 522 390 188 177 85
∴ Last step = Step IV

30. (*e*) In an arrangement problem, input/previous steps cannot be determined.

31. (*a*) The last step will the one in which all the numbers get arranged in descending order.

Solutions (Q. Nos. 32-36)

Input 32 proud girl beautiful 48 55 97 rich family 61 72 17 nice life
Step I beautiful 17 32 proud girl 48 55 97 rich family 61 72 nice life
Step II family 32 beautiful 17 proud girl 48 55 97 rich 61 72 nice life
Step III girl 48 family 32 beautiful 17 proud 55 97 rich 61 72 nice lie
Step IV life 55 girl 48 family 32 beautiful 17 proud 97 rich 61 72 nice
Step V nice 61 life 55 girl 48 family 32 beautiful 17 proud 97 rich 72
Step VI proud 72 nice 61 life 55 girl 48 family 32 beautiful 17 97 rich
Step VII rich 97 proud 72 nice 61 life 55 girl 48 family 32 beautiful 17

32. (*c*) **33.** (*d*) **34.** (*c*) **35.** (*a*) **36.** (*b*)

Type 3 Problems Based on Mathematical Operation

In this type of questions the input has some numbers. Different steps are obtained by taking the numbers of the input and different arithmetic operations are performed after that.

Such type of problems can be better understood with the following format of the questions

Directions (Example Nos. 11-15) Study the following information carefully and answer the given questions. A number arrangement machine, when given as input line of number rearranges them following a particular rule in each step. The following is the illustration of the input and the steps of arrangement.

Input	25	22	15	36	29	99
Step I	7	4	6	9	11	18
Step II	10	4	5	18	18	81
Step III	625	484	225	1296	841	9801
Step IV	15625	10648	3375	46656	24389	970299
Step V	5	4.4	3	7.2	9.76	19.8
Step VI	7	4	6	9	2	9
Step VII	27	24	17	38	31	101
Step VIII	20	17	10	31	24	94
Step IX	75	66	45	108	87	297
Step X	14	8	12	18	22	36
Step XI	3	0	4	3	7	0
Step XII	–3	0	– 4	–3	–7	0
Step XIII	49	16	36	81	121	324

Ex **11** If Input is 11, 15, 19, 12, 14, then find the Step XIII for this input.

(a) 36, 4, 100, 9, 25 (b) 4, 36, 100, 9, 25 (c) 2, 6, 10, 3, 5 (d) Cannot be determined
(e) None of these

Ex **12** If Step I of a given input is as follows '7, 9, 6, 15, 16, 18', then find the input.

(a) 25, 63, 42, 96, 88, 99 (b) 52, 36, 24, 69, 88, 99
(c) 25, 36, 24, 96, 88, 99 (d) Cannot be determined
(e) None of these

Ex **13** If Step V is '6, 9, 12, 75, 8', then find the input.

(a) 30, 45, 60, 375, 40 (b) 24, 54, 26, 78, 56 (c) 40, 375, 60, 45, 30 (d) 10, 13, 16, 79, 12
(e) None of these

Ex **14** If input is '35, 95, 43, 45, 98, 81', then find Step XII.

(a) – 2, 4, – 1, 1, – 1, 7 (b) – 2, 4, 1, – 1, 1, 7 (c) 2, 6, 5, 4, 3,2 (d) Cannot be determined
(e) None of these

Ex **15** If input is '78, 12, 27, 16, 87, 45', then find the Step II.

(a) 56, 2, 14, 6, 56, 20 (b) 15, 3, 9, 7, 15, 9 (c) 76, 9, 25, 14, 85, 43 (d) Cannot be determined
(e) None of these

Solution (Q. Nos. 11-15)

Logic

Step I Digit-sum of input.
Step II Product of the digits of input
Step III Square of the each number of the input
Step IV Cube of the each number of the input
Step V Each number of the input is divided by 5
Step VI Keep adding digits till they are converted into single digit
Step VII Each number of the input + 2
Step VIII Each number of the input − 5
Step IX Each number of the input × 3
Step X Digit sum of each number of input × 2
Step XI Difference between digits of each number of input
Step XII (1st digit − 2nd digit) of each number of input
Step XIII (Digit sum of each number of input)^2

11. (*b*) (Digits sum of each number of input)^2

12. (*d*) As it is very obvious.

13. (*a*) $\because$ Step V = $\dfrac{\text{Each number of the input}}{5}$

$\therefore$ Each number of the input = (Step V) × 5

14. (*b*) (1st digit – 2nd digit) of each number of the input.

15. (*a*) Product of digits of each number of the input.

The above example gives you an idea about the type of mathematical/arithmetical operations that can take place in such problems.

Practice Corner **18.3**

Build your Confidence...

Directions (Q.Nos. 1-5) Study the following information to answer the following questions. A number arrangement machine, when given a particular input, rearranges it following a particular rule. The following is the illustration of the input and the steps of the arrangement.

Input	44	35	18	67	22	28	36
Step I	36	27	10	59	14	20	28
Step II	16	15	8	42	4	16	18
Step III	132	105	54	201	66	84	108
Step IV	50	41	24	73	28	34	42
Step V	8	8	9	4	4	1	9
Step VI	64	64	81	169	16	100	81
Step VI	20	19	12	46	8	20	22

1. What will be the 4th step of the following input?
Input '24, 88, 22, 34, 81, 90, 38'

(a) 30, 94, 28, 40, 87, 92, 40
(b) 30, 94, 28, 40, 87, 96, 44
(c) 44, 96, 87, 40, 28, 94, 30
(d) Cannot be determined
(e) None of these

2. The second step of a given input is 45, 27, 35, 28, 42, 15. What will be Step VII for the input?

(a) 49, 31, 39, 32, 46, 19
(b) 50, 31, 40, 22, 37, 19
(c) 19, 46, 32, 39, 31, 49
(d) Cannot be determined
(e) None of these

3. In how many steps would the following arrangement be yielded by the given input?
Input '91, 45, 67, 51, 32, 17'
Arrangement 100, 81, 169, 36, 25, 64

(a) VI
(b) III
(c) V
(d) VII
(e) None of these

4. What will be the Step V of the following input?
Input '37, 48, 91, 22, 49'

(a) 10, 12, 10, 4, 13
(b) 4, 4, 1, 3, 1
(c) 1, 3, 1, 4, 4
(d) Cannot be determined
(e) None of these

5. Find the Step III of the following input.
Input '17, 50, 37, 23, 35'

(a) 51, 150, 111, 69, 105
(b) 8, 5, 10, 6, 8
(c) 150, 51, 111, 69, 105
(d) Cannot be determined
(e) None of the above

Directions (Q.Nos. 6-10) Study the following information to answer the following questions. A number arrangement machine, when given an input line of numbers, rearranges them following a particular rule in each step. The following is the illustration of the input and the steps of arrangement.

Input	'13 25 9 17 15 32 7 20'
Step I	8 20 4 12 10 27 2 15
Step II	22 34 18 26 24 41 16 29
Step III	121 529 49 225 69 900 25 324
Step IV	169 625 81 289225 1024 49 400
Step V	144 576 64 256196 961 36 361
Step VI	676 2500 3241156 900 4096 196 1600

6. What will be the fourth step of the following input?
Input '8 18 28 38 48 58 68 27'

(a) 46, 289, 784, 1444, 2304, 3364, 4624, 729
(b) 64, 234, 784, 1444, 2304, 3364, 4624, 729
(c) 64, 324, 748, 1444, 2304, 3364, 4624, 729
(d) 64, 324, 748, 1444, 2304, 3364, 4624, 729
(e) None of the above

7. The sixth step for a given input is
1156, 5776, 2304, 324, 1296, 2916, 7056, 576
What will be the input?

(a) 15, 36, 22, 7, 16, 25, 40, 10
(b) 17, 38, 24, 9, 18, 27, 42, 12
(c) 19, 40, 26, 11, 20, 29, 44, 14
(d) 21, 42, 28, 13, 22, 31, 46, 16
(e) None of the above

8. In how many steps, the arrangement given below the following input would be arrived at?
Input '11, 17, 22, 34, 8, 25, 38, 43'
Arrangement 100, 256, 441, 1089, 49, 576, 1369, 1764

(a) 3 (b) 5
(c) 4 (d) 6
(e) None of these

9. The second step of a given input is
57, 41, 37, 53, 44, 26, 17, 32
What will be the input?

(a) 109, 1404, 38, 58, 1928, 32, 829, 925
(b) 2304, 1024, 784, 1936, 1225, 289, 64, 529
(c) 4023, 1042, 874, 1936, 1225, 289, 64, 529
(d) 2304, 1024, 874, 1936, 1225, 289, 64, 529
(e) None of the above

10. What would be Step VI for the following input?
8, 12, 16, 24, 6, 15, 2, 13

(a) 17, 21, 25, 33, 15, 24, 11, 21
(b) 3, 7, 11, 19, 1, 10, −3, −8
(c) 256, 576, 1024, 2304, 144, 900, 16, 676
(d) 64, 144, 256, 576 36, 225, 4, 169
(e) None of the above

Response & Interpretations (18.3)

Solutions (Q. Nos. 1-5)

Logic
Step I (Each number of the input) − 8
Step II Product of the digits of each number of the input
Step III (Each number of the input) × 3
Step IV (Each number of the input)+ 6
Step V Keep adding the digits of each number of the input till they are converted into single digit
Step VI (Digit sum of each number of input)^2
StepVII (Each number of Step II) + 4

1. (*b*) Step IV = (Each number of the input) + 6

2. (*a*) Step VII = (Each number of Step II) + 4

3. (*a*) As given arrangement
= (Digit sum of each number of input)^2
which is the logic of Step VI.

4. (*a*) As in Step V, digits of each number of given input are added till each number get converted into single digit. Let us see

$37 \Rightarrow 3 + 7 = 10 \Rightarrow 1 + 0 = 1$
$48 \Rightarrow 4 + 8 = 12 \Rightarrow 1 + 2 = 3$
$91 \Rightarrow 9 + 1 = 10 \Rightarrow 1 + 0 = 1$
$22 \Rightarrow 2 + 2 = 4$
$49 \Rightarrow 4 + 9 = 13 \Rightarrow 1 + 3 \Rightarrow 4$

5. (*a*) Step III = (Each number of the input) × 3

Solutions (Q. Nos. 6-10)

Logic

Step I (Each number of input) – 5
Step II (Each number of input) + 9
Step III $(\text{Each number of input} - 2)^2$
Step IV $(\text{Each number of input})^2$
Step V $(\text{Each number of input} - 1)^2$
Step VI $(\text{Each number of input} \times 2)^2$

6. (*b*) Step IV = $(\text{Each number of input})^2$

7. (*b*) As Step VI = $(\text{Each number of Input} \times 2)^2$

$\Rightarrow$ Each number of input = $\frac{\sqrt{\text{Step VI}}}{2}$

8. (*b*) As Step V = $(\text{Each number of input} - 1)^2$

9. (*e*) As Step II = (Each number of input) + 9 $\Rightarrow$ Each number of input = (Step II) – 9

Hence, it is clear that out of the given options (a), (b), (c) and (d), no one can be correct.

10. (*c*) As Step VI = $(\text{Each number of input} \times 2)^2$

Type 4 Miscellaneous Problems

We have already discussed in the begining of the chapter that there is no fixed pattern of questions coming under this category. Infact, questions under this category come before you as a real surprise. Therefore, such questions are complete mind game.

Directions (Example Nos. 16-20) Study the following information to answer the following questions. A number arrangement machine when given an input line of numbers, rearranges them following a particular rule in each step. The following is an illustration of input and steps of arrangement.

Input '35 261 15 812 12 127'
Step I 53 126 51 281 21 712
Step II 305 2061 105 8012 102 1027
Step III 53 612 51 128 21 271
Step IV 3 26 1 81 1 12
Step V 350 2610 150 8120 120 1270

Ex **16** **Step V** 160 850 900 750 590. Find out the input.
(a) 150 850 900 750 590 (b) 85 16 90 75 59 (c) 16 85 90 75 59 (d) Cannot be determined
(e) None of these

Ex **17** **Input** 72 25 85 97 43 91. What would be the Step IV?
(a) 7 2 8 9 4 9 (b) 2 5 5 7 3 1 (c) 9 4 9 8 2 7 (d) Cannot be determined
(e) None of these

Ex **18** **Step II** 204 5018 800 902 401 6017. What would be the input?
(a) 20 51 80 90 40 60 (b) 24 518 80 92 41 617 (c) 617 41 92 80 518 24 (d) Cannot be determined
(e) None of these

Ex **19** **Step IV** 2 29 1 92 35 48. Find out the input?
(a) 29 292 15 925 352 483 (b) 28 296 18 928 356 482 (c) 22 293 17 923 355 486 (d) Cannot be determined
(e) None of these

Ex **20** **Step I** 39 44 68 58 18 182. Find out the input.
(a) 93 44 86 85 81 812 (b) 93 39 44 68 58 182 (c) 93 44 85 86 81 812 (d) 93 44 85 8186 812
(e) None of these

Solutions (Example Nos. 16-20)

Logic **Step I** Last digit becomes first.
Step II 0 comes after the 1st digit.
Step III 1st digit becomes last in two-digit numbers while middle digit becomes the 1st digit in three-digit numbers.
Step IV Last digit get removed.
Step V 0 comes at the end.

16. (*c*) 0 is removed from the end of every number.

17. (*a*) Last digit from every number is removed.

18. (*b*) 0 after the 1st digit is removed.

19. (*d*) It is not possible to find out last digits and hence input cannot be determined.

20. (*a*) 1st digit becomes last in two-digit numbers and middle digit becomes 1st in three-digit numbers.

Practice Corner **18.4**

Build your Confidence...

Directions (Q.Nos. 1-5) Study the following informations to answer the given questions. A number arrangement machine when given an input line of numbers, rearranges them following a particular rule in each step. The following is an illustration of input and steps of arrangement.

Input 23 132 38 27 430 287
Step I 2 13 3 2 43 28
Step II 3 32 8 7 30 87
Step III 32 231 83 72 034 782
Step IV 3 2 4 3 5 3
Step V 34 233 49 38 531 388

1. What will be Step V for the following input?
Input '135, 88, 24, 215, 16'

(a) 236, 99, 35, 316, 27 (b) 136, 99, 25, 216, 17
(c) 17, 216, 25, 99, 136 (d) Cannot be determined
(e) None of these

2. If **Step II** is '16, 9, 22, 416, 25, 67', then find the input.

(a) 18, 11, 24, 418, 27, 69 (b) 11, 18, 24, 418, 27, 69
(c) 69, 27, 418, 24, 11, 18 (d) Cannot be determined
(e) None of these

3. What will be the Step III for the following input?
Input '777, 29, 435, 115, 61, 37'

(a) 777, 92, 436, 116, 62, 37 (b) 777, 92, 534, 16, 511, 73
(c) 777, 92, 534, 511, 16, 73 (d) Cannot be determined
(e) None of these

4. If **Step I** of an input is '4, 16, 121, 8, 17', then find the input.

(a) 45, 163, 1217, 87, 178 (b) 46, 163, 1213, 85, 172
(c) 41, 161, 1216, 82, 176, (d) Cannot be determined
(e) None of these

5. What will be Step IV for the following input?
220, 197, 15, 37, 89, 75

(a) 3, 2, 2, 4, 9, 8 (b) 1, 8, 6, 8, 10, 6
(c) 6, 10, 8, 6, 8, 1 (d) 8, 9, 4, 2, 2, 3
(e) None of these

Directions (Q.Nos. 6-9) Study the following information to answer the given questions. A word arrangement machine when given as input line of words, rearranges them following a particular rule in each step. The following is an illustration of input and steps of arrangement.

Input every now and then same
Step I every ow nd hen ame
Step II ever no an the sam
Step III vry nw nd thn sm
Step IV ee o a e ae
Step V ery w d en me

6. What will be the Step V for the following input?
Input you are the one great person

(a) u e e e eat rson
(b) e e u e eat rson
(c) yo ar th on gr pe
(d) Cannot be determined
(e) None of these

7. If Step IV of an input is 'e i a oo ou', then find the input.

(a) get will an spoon you
(b) left wit at noon you
(c) net wit at noon you
(d) Cannot be determined
(e) None of these

8. Find Step II for the following input.
Input 'you must be agree'.

(a) ou ust e gree
(b) yu mst b ee
(c) yo mus b agre
(d) Cannot be determined
(e) None of these

9. What will be Step IV for the input given below?
Input items are very good

(a) ie ae e oo
(b) ie ar ve go
(c) ms ar ry od
(d) Cannot be determined
(e) None of these

Response & Interpretations (18.4)

Solutions (Q. Nos. 1-5)

Logic
Step I Rightmost digit of each number of input gets disappeared.
Step II Leftmost digit of each number of input is disappeared
Step III Leftmost and rightmost digits of each number of input are interchanged
Step IV Leftmost digit of each number of input + 1
Step V Leftmost and rightmost digits of each number of input increase by 1

1. (*a*) In Step V, leftmost and rightmost digits of each number of input increase by 1.

2. (*d*) In Step II, rightmost digit of each number of input gets diappeared but it is impossible to get rightmost digits of the numbers of input from Step II.

3. (*c*) In Step III, leftmost and rightmost digits of each number of input are interchanged.

4. (*d*) In Step I, rightmost digit of each number of input gets disappeared but practically it is impossible to find out rightmost digit of input from Step I.

5. (*a*) ∵ Step IV = Leftmost digit of each number of input + 1

Solutions (Q. Nos. 6-9)

Logic **Step I** First letters disappear
Step II Last letters disappear
Step III Vowels disappear
StepIV Consonants disappear
Step V First two letters disappear

6. (*a*) As in Step V, first two letters in each word of input get disappeared.

7. (*d*) It is very obvious.

8. (*c*) As in Step II, last letter in each word of input gets disappeared.

9. (*a*) As in Step IV, consonants in each word of input get disappeared.

Master Exercise

Take a Leap...

Directions (Q.Nos. 1-7) Study the following information carefully and then answer the questions given below it. A word arrangement machine when given on input line of words rearranges them following a particular rule in each step. The following is an illustration of the input and rearrangement. **[Central Bank (PO) 2006]**

Input Zeal for and yellow bench state goal on
Step I and zeal for yellow bench state goal on
Step II and bench zeal for, yellow state goal on
Step III and bench for zeal yellow state goal on
Step IV and bench for goal zeal yellow state on
Step V and bench for goal on zeal yellow state
Step VI and bench for goal on state zeal yellow
Step VII and bench for goal on state yellow zeal

And Step VII is the last step.

As per the rules followed in the above steps, find out in each of the following questions, the appropriate steps for the given input.

1. **Input** 'ginger year town sour cat bring ink pot'. Which of the following steps will be the last but one?

(a) VI (b) V (c) VII (d) VIII
(e) None of these

2. **Input** 'your job is not very important to him'.
Which of the following steps will be the last?

(a) VIII (b) VII (c) VI (d) IX
(e) None of these

3. **Step II** of an input is car down table pen jug water fall sign.
How many more steps will be required to complete the rearrangement?

(a) Four (b) Five (c) Three (d) Six
(e) None of these

4. **Step III** of an input is ball elephant goat trade over horse never there.
Which of the following is definitely the input?

(a) goat ball trade elephant over horse never there
(b) trade horse ball goat elephant over never there
(c) horse trade ball goat elephant over never there
(d) Cannot be determined
(e) None of the above

5. **Step II** of an input is crown divine victory sky force take lane honey. Which of the following will be Step V?

(a) crown divine force honey lane take victory sky
(b) crown divine force honey lane victory sky take
(c) crown divine force honey victory sky take lane
(d) crown divine force victory sky take lane honey
(e) None of the above

6. **Input** 'carry over there until you are held down'. Which of the following will be Step IV?

(a) are carry down over there until you held
(b) are carry down held over there until you
(c) are carry over there until you held down
(d) there will be no such step
(e) None of the above

7. **Input** 'he was getting ready to start for office'. How many steps will be required to complete the arrangement?

(a) 4
(b) 5
(c) 6
(d) 3
(e) None of the above

Master Exercise

Directions (Q.Nos. 8-14) Study the following information carefully and then answer the question given below it. A word and number arrangement machine when given on input line of words and numbers rearranges them following a particular rule in each step. The following is an illustration of input and rearrangement.

[Corporation Bank PO 2006]

Input 'Past back 32 47 19 own fear 25'
Step I 19 past back 32 47 own fear 25
Step II 19 past 25 back 32 47 own fear
Step III 19 past 25 own back 32 47 fear
Step IV 19 past 25 own 32 back 47 fear
Step V 19 past 25 own 32 fear back 47
Step VI 19 past 25 own 32 fear 47 back

And Step VI is the last step.

As per rules followed in the above steps, find out in each of the following questions, the appropriate step for the given input.

8. Which of the following will be Step VI?

(a) 21 win 39 tyre 46 file case 51
(b) 21 win 39 tyre 46 file 51 case
(c) 21 win 39 tyre file 46 51 case
(d) 21 win 39 tyre 46 case file 51
(e) There will be no such step

9. **Input** 83 42 bench lower 13 upper floor 37. Which of the following will be Step III?

(a) 13 upper 37 83 42 bench lower floor
(b) 13 upper 37 lower 83 42 bench floor
(c) 13 83 42 bench lower upper floor 37
(d) 13 upper 83 42 bench lower floor 37
(e) None of the above

10. **Step II** of an input is 27 ultra open case 45 35 now 12. Which of the following is definitely the input?

(a) ultra open 27 case 45 35 now 12
(b) open case ultra 27 45 35 now 12
(c) open case 27 45 35 now 12 ultra
(d) Cannot be determined
(e) None of the above

11. **Input** Case over 12 36 49 long ago 42. Which of the following steps will be the last but one?

(a) V (b) VI (c) VII (d) VIII
(e) None of these

12. **Input** Judge retire home 62 53 41 34 task. How many steps will be required to complete the arrangement?

(a) 6 (b) 5 (c) 4 (d) 7
(e) None of these

13. **Step IV** of an input is 24 step 27 pick 94 85 76 bring down. How many more steps will be required to complete the rearrangement?

(a) 2 (b) 3 (c) 4 (d) 5
(e) None of these

14. **Step III** of an input is 17 vice 22 85 and car oil 42. How many more steps will be required to complete the rearrangement?

(a) 3 (b) 4 (c) 5 (d) 6
(e) None of these

Directions (Q.Nos. 15-18) Study the following information carefully and answer the given questions. A word and number arrangement machine when given an input line of words and numbers rearranges them following a particular rule in each step. The following is an illustration of input and rearrangement. (All the numbers are two-digit numbers)

[IBPS (PO) 2012]

Input 'tall 4813 rise alt 99 76 32 wise jar high 28 56 barn'
Step I 13 tall 48 rise 99 76 32 wise jar high 28 56 barn alt
Step II 28 13 tall 48 rise 99 76 32 wise jar high 56 alt barn
Step III 32 28 13 tall 48 rise 99 76 wise jar 56 alt barn high
Step IV 48 32 28 13 tall rise 99 76 wise 56 alt barn high jar
Step V 56 48 32 28 13 tall 99 76 wise alt barn high jar rise
Step VI 76 56 48 32 28 13 99 wise alt barn high jar rise tall
Step VII 99 76 56 48 32 28 13 alt barn high jar rise tall wise

And Step VII is the last step of the above input, as the desired arrangement is obtained.

As per the rules followed in the above steps, find out in each of the following questions the appropriate step for the given input.

Input 84 why sit 14 32 not best ink feet 51 27 vain 68 92 (All the numbers are two-digit numbers)

15. Which step number is the following output?
32 27 14 84 why sit not 51 vain 92 68 feet best ink

(a) Step V (b) Step VI (c) Step IV (d) Step III
(e) There is no such step

16. Which word/number would be at 5th position from the right in Step V?

(a) 14 (b) 92
(c) feet (d) best
(e) why

17. How many elements (words or numbers) are there between 'feet' and '32' as they appear in the last step of the output?

(a) One (b) Three (c) Four (d) Five
(e) Seven

18. Which of the following represents the position of 'why' in the fourth step?

(a) Eighth from the left (b) Fifth from the right
(c) Sixth from the left (d) Fifth from the left
(e) Seventh from the left

Directions (Q.Nos. 19-24) Study the following information to answer the questions given below it. A number sorting machine, when given an input of numbers, rearranges the numbers in a particular manner step by step as indicated below—till all the numbers are arranged in a particular order.

Input	29	2	15	5	20	11	50	105	28	19	30	140
Step I	2	29	15	5	20	11	50	105	28	19	30	140
Step II	2	140	15	5	20	11	50	105	28	19	30	29
Step III	2	140	5	15	20	11	50	105	28	19	30	29
Step IV	2	140	5	105	20	11	50	15	28	19	30	29
Step V	2	140	5	105	11	20	50	15	28	19	30	29
Step VI	2	140	5	105	11	50	20	15	28	19	30	29
Step VII	2	140	5	105	11	50	15	20	28	19	30	29
Step VIII	2	140	5	105	11	50	15	30	28	19	20	29
Step IX	2	140	5	105	11	50	15	30	19	28	20	29
Step X	2	140	5	105	11	50	15	30	19	29	20	28

19. Which of the following is the input of the following final output?
Final output '16 159 19 160 40 161 80 162'

(a) 19 16 159 40 162 80 160 161
(b) 162 16 40 19 161 159 80 160
(c) 80 159 19 16 40 160 162 161
(d) Cannot be determined
(e) None of the above

20. Which of the following will be the Step II for the following input?
Input '16 13 400 26 150 200 19.'

(a) 13 16 400 26 150 200 19
(b) 13 400 19 26 150 200 16
(c) 13 400 16 26 150 200 19
(d) Cannot be determined
(e) None of the above

21. Which of the following will be the first step for the following input?
Input '100, 500, 2, 400, 20, 3, 800, 1, 999, 666'

(a) 1, 500, 2, 400, 20, 3, 800, 100, 999, 666
(b) 2, 500, 100, 400, 20, 3, 800, 1, 999, 666
(c) 999, 500, 2, 400, 20, 3, 800, 1, 100, 666
(d) Cannot be determined
(e) None of the above

22. How many steps would be required in getting the final output for the following input?
Input '10, 4, 1, 9, 8 12'.

(a) One (b) Two
(c) Three (d) Four
(e) None of these

23. Which of the following will be the Vth step for the following input?
Input '15, 19, 90, 3, 50, 16, 4, 99, 91'

(a) 3, 99, 4, 91, 50, 16, 90, 19, 15
(b) 3, 99, 4, 91, 15, 16, 90, 19, 50
(c) 3, 99, 4, 91, 15, 90, 16, 19, 50
(d) Cannot be determined
(e) None of the above

24. Which of the following will be the IIIrd step for the following input?
Input '20, 10, 50, 55, 40, 19, 12'

(a) 10 55 50 20 40 19 12
(b) 10 20 50 55 40 19 12
(c) 10 55 12 40 20 19 50
(d) Cannot be determined
(e) None of the above

Directions (Q.Nos. 25-29) Study the following information carefully and answer the given questions. A word and number arrangement machine when given an input line of words and numbers rearrange them following a particular rule in each step. The following is an illustration of input and rearrangement. **[SBI Bank (PO) 2010]**

Input 'gain 96 63 forest 38 78 deep house'
Step I deep gain 96 63 forest 38 78 house
Step II deep 38 gain 96 63 forest 78 house
Step III deep 38 forest gain 96 63 78 house
Step IV deep 38 forest 63 gain 96 78 house
Step V deep 38 forest 63 gain 78 96 house
Step VI deep 38 forest 63 gain 78 house 96

And Step VI is the last step of the rearrangement of the above input.
As per the rules of followed in the above steps, find out in each of the following questions the appropriate step for the given input.

25. **Input** 'train 59 47 25 over burden 63 sky'
Which of the following steps will be the last but one?

(a) VI
(b) V
(c) IV
(d) VII
(e) None of the above

26. **Input** 'service 46 58 96 of there desk 15'
Which of the following will be Step VI?

(a) desk 15 over service 46 58 96 there
(b) desk 15 over 46 service there 58 96
(c) desk 15 over 46 service 58 there 96
(d) desk 15 over 46 service 58 96 there
(e) There will be no such step

27. **Step II** of an input is below 12 93 house floor 69 57 task
Which of the following will definitely be the input?

(a) 93 house 89 57 below task floor 12
(b) 93 house below 69 57 task floor 12
(c) 93 house floor 69 57 task below 12
(d) Cannot be determined
(e) None of the above

28. **Step III** of an input is art 24 day 83 71 54 star power
Which of the following steps will be the last?

(a) V
(b) VIII
(c) IX
(d) VII
(e) None of these

29. **Step II** of an input is cold 17 wave 69 never desk 52 43
How many more steps will be required to complete the rearrangement?

(a) Six
(b) Five
(c) Four
(d) Three
(e) None of the above

Directions(Q. Nos. 30-35) An electronic device, when fed with the numbers, rearranges them in a particular order following certain rules. The following is a step by step process of rearrangements for the given input of numbers.

Input '5 28 12 74 3 11 31 42'
Step I 74 5 28 12 3 11 31 42
Step II 74 3 5 28 12 11 31 42
Step III 74 3 42 5 28 12 11 31
Step IV 74 3 42 5 28 11 12 31

For the given input, Step IV is the last step.

30. Which of the following will be the step III for the following input?
Input '89 24 44 25 9 14 5 2'

(a) 44 5 14 25 89 9 2 24
(b) 44 5 14 9 24 2 89 25
(c) 44 5 24 9 85 25 14 2
(d) 44 5 89 24 25 9 4 2
(e) None of the above

31. Which step would be the last step for the following input?
Input '89 24 44 25 9 14 5 2'

(a) Step IV
(b) Step III
(c) Step VI
(d) Step VII
(e) Step VIII

32. If the Step IV is as given below, which of the following will be the input?
Step IV '48 03 22 7 12 25'

(a) 03 25 12 48 22 07
(b) 03 25 48 12 22 07
(c) 03 48 25 12 22 07
(d) None of these
(e) Cannot be determined

33. Which will be the IIIrd step for the following input?
Input '03 25 12 48 22 07'

(a) 48 03 22 25 12 07
(b) 48 03 25 12 22 07
(c) 48 03 22 07 12 25
(d) 48 03 22 07 25 12
(e) None of these

34. Which of the following will be the last step for the following input?
Input '05 27 50 14 24 9'

(a) III
(b) IV
(c) VI
(d) VII
(e) None of these

35. Which of the following will be the Step III for the following input ?
Input '25 08 35 11 88 67 24 78'

(a) 88 11 78 25 24 08 35 67
(b) 88 11 78 25 08 35 67 24
(c) 88 25 08 35 11 67 24 78
(d) 88 11 25 08 35 67 24 78
(e) None of these

Directions (Q. Nos. 36-41) A word and number arrangement machine when given an input line of words and numbers rearranges them following a particular rule in each step. The following is an illustration of input and rearrangement. **[Syndicate Bank (PO) 2009]**

Input	'go now 52 38 17 for again 65'
Step I	65 go now 52 38 17 for again
Step II	65 again go now 52 38 17 for
Step III	65 again 52 go now 38 17 for
Step IV	65 again 52 for go now 38 17
Step V	65 again 52 for 38 go 17 now
Step VI	65 again 52 for 38 go 17 now

Step VI is the last step of the rearrangement.

As per the rules followed in the above steps, find out in each of the following questions the appropriate step for the given input.

36. Input 'show 51 36 new far 81 46 goal'
Which of the following steps will be the last but one?

(a) VII
(b) VIII
(c) VI
(d) V
(e) None of these

37. Input 'home turf 39 24 86 44 roll over'
Which of the following steps will be the last?

(a) X
(b) IX
(c) VIII
(d) VII
(e) None of these

38. Step II of an inputs is 76 ask 12 32 begin over join 42. How many more steps will be required to complete the rearrangement?

(a) Four
(b) Five
(c) Six
(d) Three
(e) None of the above

39. Step IV of an input is 58 box 47 dew 15 21 town pot. Which of the following steps will be the last?

(a) VII
(b) VI
(c) VIII
(d) IX
(e) None of these

40. Step III of an input is 94 car 86 window shut 52 31 house.
Which of the following is definitely the input?

(a) 94 car window 86 shut 52 31 house
(b) 80 window 94 car shut 52 31 house
(c) car shut window 86 52 31 house 94
(d) cannot be determined
(e) None of the above

41. Input 'buy win task 52 38 43 door 12'. Which of the following will be Step IV?

(a) 52 buy 43 door 38 task 12 win
(b) 52 buy 43 door 38 task win 12
(c) 52 buy 43 door task win 38 12
(d) There will be no such step
(e) None of the above

Directions (Q. Nos. 42-48) Study the following information to answer the given questions a word and number arrangement machine when given an input line of words and numbers, rearranges them following a particular rule. The following is an illustration of input and rearrangement. (All the numbers are two-digits numbers) **[MHA-CET 2012]**

Input 'at 52 93 46 gate join us 19 to 33 dine 27'
Step I 19 at 52 46 gate join us to 33 dine 27 93
Step II 27 19 at 46 gate join us to 33 dine 93 52
Step III 33 27 19 at gate join us to dine 93 52 46
Step IV at 33 27 19 gate join to dine 93 52 46 us
Step V dine at 33 27 19 gate join 93 52 46 us to
Step VI gate dine at 33 27 19 93 52 46 us to join

and Step VI is the last step of the arrangement of the above input as the intended arrangement is obtained.

As per the rules followed in the above steps, find one in each of the following questions the appropriate steps for the given input, input for the questions.

Input '71 14 side wall 97 for hat 65 27 gun 81 ba' (All the numbers given in the arrangement are two-digit members)

42. Which word/number would be at the 5th position from the left in Step I?

(a) 97 (b) 27 (c) side (d) hat
(e) for

43. In the last step of the arrangement, 'for' is related to '65' following a particular pattern in the same way '97' is related to '71'. 'wall' is related to which of the following if the same pattern is followed?

(a) gun (b) hat (c) 81 (d) for
(e) side

44. Which of the following represents the position of '71' in Step II of the given input?

(a) Ninth from the right (b) Second from the left
(c) Seventh from the right (d) Third from the left
(e) Fourth from the right

45. Which step number would be the following output?

bat 65 27 14 side gun hat for 97 81 71 wall

(a) Step III (b) Step VI (c) Step II (d) Step V
(e) There will be no such step

46. Which of the following would be the Step III?

(a) for bat 65 27 14 hat gun 97 81 71 wall side
(b) 65 27 14 side wall for hat bat gun 97 81 71
(c) 65 27 14 side wall for hat gun bat 71 81 97
(d) 65 27 14 side wall for hat gun bat 97 81 71
(e) None of the above

47. Which word/number would be at the 7th position from the right in Step V?

(a) hat (b) gun
(c) for (d) side
(e) 14

48. How many steps are required to complete the arrangement?

(a) Four (b) Five
(c) Six (d) Seven
(e) Eight

Response & Interpretations (Master Exercise)

Solutions (Q. Nos. 1-7)

The given problem is based on arrangement in which words of the input get arranged in alphabetical order from left to right. In Step I, the word coming first alphabetically comes at the first position from left pushing the remaining line towards right; in step II, the word coming second alphabetically comes at the second position from left pushing the remaining line rightward; in step III, word coming 3rd alphabetically comes at the 3rd position from left pushing the rest of the line rightward and further steps are obtained in the same manner till all the words of the input get arranged.

1. (*b*) **Input** ginger year town sour cat bring ink pot.
Step I bring ginger year town sour cat ink pot
Step II bring cat ginger year town sour ink pot
Step III bring cat ginger ink year town sour pot
Step IV bring cat ginger ink pot year town sour
Step V bring cat ginger ink pot sour year town
Step VI bring cat ginger ink pot sour town year
Step VI is the last step, hence Step V will be last but one.

2. (*b*) **Input** your job is not very important to him
Step I him your job is not very important to
Step II him important your job is not very to
Step III him important is your job not very to
Step IV him important is job your not very to
Step V him important is job not your very to
Step VI him important is job not to your very
Step VII him important is job not to very your
∴ Last step = step VII

3. (*a*) **Step II** car down table pen jug water fall sign
Step III car down fall table pen jug water sign
Step IV car down fall jug table pen water sign
Step V car down fall jug pen table water sign
Step VI car down fall jug pen sign table water (final step)
Four more steps are required to reach the final step

4. (*d*) In the arrangement problem input/previous steps can never be determined.

5. (*b*) **Step II** crown divine victory sky force take lane honey
Step III crown divine force victory sky take lane honey
Step IV crown divine force honey victory sky take lane
Step V crown divine force honey lane victory sky take
Shortcut
Just take five words alphabetically and put them before the rest of the words. (See 'Rule D' under the section arrangement)

6. (*d*) **Input** carry over there untill you are held down
Step I are carry over there untill you held down
Step II are carry down over there untill you held
Step III are carry down held over there untill you
As Step III is the last step of the given input, hence step IV is not possible.

7. (c) **Input** he was getting ready to start for office
Step I for he was getting ready to start office
Step II for getting he was ready to start office
Step III for getting he office was ready to start
Step IV for getting he office ready was to start
Step V for getting he office ready start was to
Step VI for getting he office ready start to was
∴ Step VI is the last step.
Hence, required number of steps = 6.

Solutions (Q.Nos. 8-14)

The given problem is based on arrangement in which numbers and words get arranged alternately. Numbers get arranged in ascending order while words get arranged in reverse alphabetical order.

8. (*e*) **Step II** 21 win tyre 46 39 case file 51
Step III 21 win 39 tyre 46 case file 51
Step IV 21 win 39 tyre 46 file case 51
Step V 21 win 39 tyre 46 file 51 case.
This is the last step. Hence, there will be no VI step.

9. (*a*) **Input** 83 42 bench lower 13 upper floor 37
Step I 13 83 42 bench lower upper floor 37
Step II 13 upper 83 42 bench lower floor 37
Step III 13 upper 37 83 42 bench lower floor.

10. (*d*) Input cannot be determined.

11. (*e*) **Input** case over 12 36 49 long ago 42
Step I 2 case over 36 49 long ago 42
Step II 12 over case 36 49 long ago 42
Step III 12 over 36 case 49 long ago 42
Step IV 12 over 36 long case 49 ago 42
Step V 12 over 36 long 42 case 49 ago
Thus, Vth step is the last step.
∴ Last but one step is IV.

12. (*a*) **Input** Judge retire home 62 53 41 34 task
Step I 34 Judge retire home 62 53 41 task
Step II 34 task judge retire home 62 53 41
Step III 34 task 41 judge retire home 62 53
Step IV 34 task 41 retire judge home 62 53
Step V 34 task 41 retire 53 judge home 62
Step VI 34 task 41 retire 53 judge 62 home
Hence, VI steps are required.

13. (*c*) **Step IV** 24 stop 27 pick 94 85 76 bring down
Step V 24 stop 27 pick 76 94 85 bring down
Step VI 24 stop 27 pick 76 down 94 85 bring
Step VII 24 stop 27 pick 76 down 85 94 bring
Step VIII 24 stop 27 pick 76 down 85 bring 94
This is the last step. Hence, four more steps will be required to complete the rearrangement.

14. (*a*) **Step II** 17 vice 22 85 and car oil 42
Step IV 17 vice 22 oil 85 and car 42
Step V 17 vice 22 oil 42 85 and car
Step VI 17 vice 22 oil 42 car 85 and
This is the last step. Hence, three more steps will be required to complete the rearrangement.

Solutions (Q.Nos. 15-18)

The machine rearranges words and numbers in such a way that numbers are arranged form left side with the smallest number coming first and move subsequently so that in the last step numbers are arranged in descending order while the words are arranged from right side as they appear in English alphabetical order.

Input 84 why sit 14 32 not best ink feet 51 27 vain 68 92
Step I 14 84 why sit 32 not ink feet 51 27 vain 68 92 best
Step II 27 14 84 why sit 32 not ink 51 vain 68 92 best feet
Step III 32 27 14 84 why sit not 51 vain 68 92 best feet ink
Step IV 51 32 27 14 84 why sit vain 68 92 best feet ink not
Step V 68 51 32 27 14 84 why vain 92 best fet ink not sit
Step VI 84 51 32 27 14 why 92 best feet ink not sit vain
Step VII 92 84 51 32 27 14 best feet ink not sit vain why

15. (*e*)

16. (*d*)

17. (*b*) 27, 14 and best are the three elements between 'feet' and '32' in the last step which is step VII.

18. (*c*) Sixth from left.

Solutions (Q.Nos. 19-24)

Final arrangement of the input shows that there are two series — one in ascending order and other in descending order. In the first step, the smallest number is exchanged with the first number of the input. In the second step, largest number is exchanged with the second number of the step I. In the third step, second smallest number is exchanged with the third number of step II. Likewise, series continues to get arranged.

19. (*d*) We cannot determine the input for the given step as original position of numbers in input cannot be determined.

20. (*c*)

Input	16	13	400	26	150	200	19
Step I	13	16	400	26	150	200	19
Step II	13	400	16	26	150	200	19

21. (*a*)

Input	100	500	2	400	20	3	800	1	999	666
Step I	1	500	2	400	20	3	800	100	999	666

22. (*d*)

Input	10	4	1	9	8	12
Step I	1	4	10	9	8	12
Step II	1	12	10	9	8	4
Step III	1	12	4	9	8	10
Step IV	1	12	4	10	9	9

23. (*b*)

Input	15	19	90	3	50	16	4	99	91
Step I	319	90	15	50	16	4	99	91	
Step II	3	99	90	15	50	16	4	19	91
Step III	3	99	4	15	50	16	90	19	91
Step IV	3	99	4	91	50	16	90	19	15
Step V	3	99	4	91	15	16	90	19	50

24. (*e*) **Input** 20 10 50 55 40 19 12
Step I 10 20 50 55 40 19 12
Step II 10 55 50 20 40 19 12
Step III 10 55 12 20 40 19 50

Solutions (Q.Nos. 25-29)

In step I, the word that comes first in alphabetical order comes to the leftmost position pushing the rest of the line rightward; in step II,the smallest number comes to the second position from left pushing the rest of the line rightward. Thus, the words and numbers get arranged alternately until the former make an alphabetical order and the latter an ascending order.

25. (*b*) **Input** train 59 47 25 over burden 63 sky
Step I burden train 59 47 25 over 63 sky
Step II burden 25 train 59 47 over 63 sky
Step III burden 25 over train 59 47 63 sky
Step IV burden 25 over 47 train 59 63 sky
Step V burden 25 over 47 sky train 59 63
Step VI burden 25 over 47 sky 59 train 63
As last step = Step VI
∴ Last but one step = Step V

26. (*e*) **Input** service 46 58 96 of there desk 15
Step I desk service 46 58 96 of there 15
Step II desk 15 service 46 58 96 of there
Step III desk 15 of service 46 58 98 there
Step IV desk 15 of 46 service 58 98 there
Step V desk 15 of 46 service 58 there 98.
∵ Last step = Step V
So, there will be no step VI.

27. (*d*) This is a problem based on arrangement and in arrangement problems previous step/input cannot be determined.

28. (*d*) **Step III** art 24 days 83 71 54 star power
Step IV art 24 day 54 83 71 star power
Step V art 24 days 54 power 83 71 star
Step VI art 24 day 54 power 71 83 star
Step VII art 24 day 54 power 71 star 83
∴ Last step = Step VII

29. (*c*) **Step II** cold 17 wave 69 never desk 52 43
Step III old 17 desk wave 69 never 52 43
Step IV cold 17 desk 43 wave 69 never 52
Step V cold 17 desk 43 never wave 69 52
Step VI cold 17 desk 43 never 52 wave 69
∵ Last step = Step VI
∴ After Step II, four more steps are required to complete the arrangement.

Solutions (Q. Nos. 30-35)

Pattern of the arrangement of steps of given input suggests that given input is split into two sections—one for even numbers and other for odd numbers. Then, arrange these numbers in such a way that even numbers are arranged in descending order and odd numbers are arranged in ascending order.

30. (*e*)

Input	89	24	44	25	09	14	5	2
Step I	44	89	24	25	09	14	5	2
Step II	44	05	89	24	25	09	14	2
Step III	44	05	24	89	25	09	14	2

Since, none of the options contains the correct input as shown by Step III, hence, the correct answer is option (e).

31. (*d*) If we keep arranging the steps from Step III onward as in the previous question, we get the final arrangement of the input in Step VII as below
Step VII 44 05 24 09 14 25 2 89

32. (*d*) We cannot determine the input for the given step because exact placement of the numbers in input cannot be known. As a result, option (a) and (b) both reflect the probable input.

33. (*d*) **Input** 03 25 12 48 22 07
Step I 48 03 25 12 22 07
Step II 48 03 22 25 12 07
Step III 48 03 22 07 25 12

34. (*b*) **Input** 05 27 50 14 24 09
Step I 50 05 27 14 24 09
Step II 50 05 24 27 14 09
Step III 50 05 24 09 27 14
Step IV 50 05 24 09 14 27
Step IV is the last step for the given input as it arranges the input completely.

35. (*b*) **Input** 25 08 35 11 88 67 24 78
Step I 88 25 08 35 11 67 24 78
Step II 88 11 25 08 35 67 24 78
Step III 88 11 78 25 08 35 67 24

Solutions (Q. Nos. 36-41)

In Step I, the largest number goes to the extreme left pushing rest of the line rightward; in the next step the word that comes first in alphabetical order goes to the second position from left pushing rest of the line rightward, thus the numbers and the words get arranged alternately till all the numbers are in descending order and all the words are in alphabetical order.

36. (*c*) **Input** show 51 36 new for 81 46 goal
Step I 81 show 51 36 new far 46 goal
Step II 81 for show 51 36 new 46 goal
Step III 81 for 51 show 36 new 46 goal
Step IV 81 for 51 goalshow 36 new 46
Step V 81 for 51 goal 46 show 36 new
Step VI 81 for 51 goal 46 new show 36
Step VII 81 for 51 goal 46 new 36 show
∴ Step VI will be last but one.

37. (*e*) **Input** home turf 39 24 86 44 roll over
Step I 86 home turf 39 24 44 roll over
Step II 86 home 44 turf 39 24 roll over
Step III 86 home 44 over turf 39 24 roll
Step IV 86 home 44 over 39 turf 24 roll
Step V 86 home 44 over 39 roll turf 24
Step VI 86 home 44 over 39 roll 24 turf
Clearly, last step = Step VI

38. **Step II** 76 ask 12 32 begin over join 42
Step III 76 ask 42 12 32 begin over join
Step IV 76 ask 42 begin 12 32 over join
Step V 76 ask 42 begin 32 12 over join
Step VI 76 ask 42 begin 32 join 12 over
Clearly, after Step II, four more steps are required to complete the arrangement.

39. (*b*) **Step IV** 58 box 47 dew 15 21 town pot
Step V 58 box 47 dew 21 15 town pot
Step VI 58 box 47 dew 21 pot 15 town
Clearly, last step = Step VI

40. (*d*) We cannot processed back in the arrangement problem.

41. (*e*) **Input** buy win task 52 38 43 door 12
Step I 52 buy win task 38 43 door 12
Step II 52 by 43 win task 38 door 12
Step III 52 buy 43 door win task 38 12
Step IV 52 buy 43 door 38 win task 12

Solutions (Q.Nos. 42-48)

Input 71 14 side wall 97 for hat 65 27 gun 81 bat
Step I 14 71 side wall for hat 65 27 gun 81 bat 97
Step II 27 14 71 side wall for hat 65 gun bat 97 81
StepIII 65 27 14 side wall for hat gun bat 97 81 71
StepIV bat 65 27 14 side for hat gun 97 81 71 wall
Step V for bat 65 27 14 hat gun 97 81 71 wall side
Step VI gun for bat 65 27 14 97 81 71 wall side hat

42. (*e*) The word 'for' is at the 5th position from the left in Step II

43. (*b*) for $\xrightarrow{+2}$ 65, 97 $\xrightarrow{+2}$ 71
Similarly, wall $\xrightarrow{+2}$ hat

44. (*d*) In Step II, '71' is third from the left.

45. (*e*) There will be no such step

46. (*d*) Step III is '65 27 14 side wall for hat gun bat 97 81 71'.

47. (*a*) The word 'hat' is at the 7th position from the right is Step V.

48. (*c*) VI steps are required to complete the arrangement.

19

Puzzles

Puzzles are the raw information given for a sequence or an order of thing which needs to be arranged systematically, so that the sequence or order of thing is correctly depicted.

Different types of questions covered in this chapter are as follows

- Analytical Puzzles
- Puzzles Based on Conditioning, Grouping and Team Formation
- Puzzles Based on Sequential Order of Events
- Complex Family Puzzles

In puzzles the candidates are provided with the information in jumbled or haphazard format. It checks the candidate's ability (both mental and analytical) to decipher, sequence and analyse the given information into a meaningful and judgmental form, so as to come to the final decision or conclusion by following the systematic pattern of linking and interlinking one or several informations with each other.

This segment is considered to be the most difficult part of reasoning as there exists no set pattern or formulae to solve such problems. The only way to solve these problems is using your brain, logical ability and analytical power over the interlinked information or data provided in the questions. These problems are given in the form of puzzles. As there is no fixed rules to solve these problems, only practice can make you a master in cracking these types of problems.

Several types of questions based on puzzles are asked in various competitive exams.

Based on the diversity of questions asked, we have classified them into following types

Type 1 Analytical Puzzles

Under this segment, the candidates are required to analyse and interpret the given information and present the given information or data in analytical way so that deducing the result becomes easy. In this test, the candidates are tested in the area of classification type questions, comparison type questions, sitting arrangement questions and many types of jumbled pattern.

In some type of questions, instructions regarding belongingness or non-belongingness of some objects or persons with some other objects or persons is given and on the basis of analysis of these instructions, the questions have to be answered.

Following examples will give you a better idea about the questions asked

Directions (Example Nos. 1-3) Read the following information carefully and answer the questions given below.

Five cities A, B, C, D and E are famous for their lovely garden, fancy jewellery, educational institute, blue pottery and scents but not in the same order.

I. A and C are neither educational institutes nor have gardens.
II. B and E are not famous for jewellery or pottery.
III. Scents and jewellery have nothing to do with A.
IV. D and E are not famous for garden and jewellery.
V. D is not famous for educational institutes.

***Ex* 1** Which of the following city is famous for gardens?

(a) A (b) C (c) D (d) B

***Ex* 2** Blue pottery is available in which of the following cities?

(a) A (b) C (c) E (d) B

***Ex* 3** City E is famous for which of the following?

(a) Jewellery (b) Educational Institutes
(c) Blue pottery (d) Scent

Solutions (Example Nos. 1-3) These questions can be solved easily with the help of a truth table. Truth table is an arrangement of the components given in a matrix form with one component in row and other component in column. In the question, components given are city and the feature for which each city is famous. First arrange the components in matrix form with cities in column and features in row.

- From I, cross (✗) the possibility of garden and education institute in front of cities A and C.
- Also, the possibility of jewellery and pottery is ruled out for cities B and E, from information II. Similarly, city A is crossed for scent and jewellery as given in information III.
- After using first three informations in the table, we see that only block uncrossed in front of city A is the one related with blue pottery. So, we know that city A is famous for blue pottery. In this block mark (✓) and cross the row and column of this block because one city is famous only for one feature.

City	Garden	Jewellery	Educational Institutes	Pottery	Scent
A	✗	✗	✗	✓	✗
B	✓	✗	✗	✗	✗
C	✗	✓	✗	✗	✗
D	✗	✗	✗	✗	✓
E	✗	✗	✓	✗	✗

- Using information IV in the table we find that city B is famous for garden and city C for jewellery. Cross row and column of each symbol (✓) obtained each time. This helps to determine one to one matching.
- Last information helps us to know that city E is famous for educational institutes and city D for scent.

The final order of matching of cities and their features is as under

Cities	**A**	**B**	**C**	**D**	**E**
Features	Blue Pottery	Garden	Jewellery	Scent	Educational Institutes

On the basis of the above table, all the questions can be answered.

1. (*d*) City B is famous for garden.

2. (*a*) Blue pottery is available in city A.

3. (*b*) City E is famous for educational institute.

Directions (Example Nos. 4-6) Read the following information carefully and answer the questions given below. **[MAT 2008]**

Four youngmen Raj, Sunder, Tarun and Upal are married to Rekha, Sunita, Tara and Uma and the couples live in Rampur, Sanchi, Tirupati and Udhampur.

I. The 1st letter of names of men, their wives and cities is not the same.
II. Sunita is not Raj's wife.
III. Sunder does not live in Rampur or Udhampur and is not Rekha's husband.
IV. Upal and Tara do not live in Sanchi.

***Ex* 4** Which pair given below is the right combination of wife and city for Tarun?
(a) Sunita, Tirupati (b) Tara, Sanchi (c) Uma, Rampur (d) Rekha, Sanchi

***Ex* 5** Who among the following is the wife of Upal?
(a) Rekha (b) Sunita (c) Tara (d) Uma

***Ex* 6** Which of the following is the correct pair of husband and wife?
(a) Upal, Sunita (b) Raj, Tara (c) Sunder, Uma (d) All of these

Solutions (Example Nos. 4-6) *This question is the same as the previous one but in this question three components—husband, wife and city are given instead of two components as in the previous question. First, arrange these components in truth table with husband in column and wife and city in row as under*

	Wives				**Cities**			
Husbands	**Rekha**	**Sunita**	**Tara**	**Uma**	**Rampur**	**Sanchi**	**Tirupati**	**Udhampur**
Raj	✗	✗	✓	✗	✗	✗	✗	✓
Sunder	✗	✗	✗	✓	✗	✗	✓	✗
Tarun	✓	✗	✗	✗	✗	✓	✗	✗
Upal	✗	✓	✗	✗	✓	✗	✗	✗

- With the help of information I, it can be concluded that Raj cannot be married with Rekha and does not live in Rampur, Sunder cannot be married with Sunita nor does he live in Sanchi, Tarun cannot be married with Tara nor does he live in Tirupati and Upal cannot be married with Uma nor does he live in Udhampur. On the basis of these informations, cross (✗) the respective blocks.
- Using information II, cross the possibility of matching of Sunita with Raj.
- Information III rules out the matching of Sunder with Rampur, Udhampur and Rekha.
- Information IV denies the matching of Upal with Sanchi. The part of this information, which denies the matching of Tara and Sanchi, cannot be used in the table now unless the husband of Tara is known. So, keep the information to be used later on.
- After using all these informations, we see that only city left in front of Sunder is Tirupati. So, mark (✓) in this block crossing row and column of city to ensure one to one matching. As a result, we know that Upal lives in Rampur.
- Using informations IV and I, we get the matching of husbands, wives and cities as under

Husbands	Tarun	Upal	Raj	Sunder
Wives	Rekha	Sunita	Tara	Uma
Cities	Sanchi	Rampur	Udhampur	Tirupati

On the basis of the above table, we can answer the questions.

4. (*d*) The correct matching pair is Rekha and Sanchi.
5. (*b*) The wife of Upal is Sunita.
6. (*d*) All the combinations given in the alternatives are correct.

Directions (Example Nos. 7-9) Read the following information carefully to answer these questions. **[NIFT (UG) 2014]**

A, B, C, D, E, F and G are the names of two rivers, three canals and two valleys. B, G and D are not canals. E and F are not rivers. C is a canal but A is a valley. B, F and G are not valleys.

***Ex* 7** Which are the two rivers?

(a) A and D (b) B and D (c) B and G (d) A and G

***Ex* 8** Which are the three canals?

(a) A, C and E (b) C, E and F (c) A, C and F (d) E, F and G

***Ex* 9** Which are the two valleys?

(a) A and D (b) D and E (c) D and G (d) A and B

Solutions (Example Nos. 7-9) *Given statements*

- B, G, D are not canals.
- E, F are not rivers.
- C is a canal.
- A is a valley
- B, F, G are not valleys.

Conclusions If B is neither a valley nor a canal, then it is a river.
If F is neither a river nor a valley, then it is a canal.
If G is neither canal nor a valley, then it is a river.

Canal	River	Valley
C	B	A
F	G	D
E		

7. (*c*) B and G are two rivers. **8.** (*b*) C, E and F are three canals. **9.** (*a*) A and D are two valleys.

Practice Corner **19.1**

Build your Confidence...

Directions (Q. Nos. 1-3) Read the following information carefully and answer the questions given below. **[MAT 2013]**

Rajneesh, Kavita, Suresh, Gambhir and Mahesh are friends and good players. Rajneesh and Kavita are good in hockey and volleyball. Suresh and Rajneesh are good in hockey and tennis. Gambhir and Kavita are good in cricket and volleyball. Suresh, Gambhir and Mahesh are good in football and tennis.

1. Who is good in hockey, volleyball and cricket?
(a) Rajneesh
(b) Suresh
(c) Kavita
(d) Gambhir

2. Who is good in tennis, cricket, volleyball and football?
(a) Suresh (b) Kavita (c) Rajneesh (d) Gambhir

3. Who is good in tennis, volleyball and hockey?
(a) Gambhir (b) Kavita (c) Suresh (d) Rejneesh

Directions (Q. Nos. 4-6) Read the following information carefully and answer the questions given below. **[IRMA 2011]**

Ravish and Kamlesh like hockey and volleyball. Suresh and Ravish likes hockey and badminton. Giri and Kamlesh like chess and volleyball. Suresh, Giri and Mukesh like football and badminton.

4. Who likes chess, hockey and volleyball?
(a) Suresh
(b) Kamlesh
(c) Ravish
(d) Giri

5. Who likes badminton, chess, football and volleyball?
(a) Suresh (b) Kamlesh (c) Giri (d) Ravish

6. Who likes hockey, volleyball and badminton?
(a) Suresh (b) Kamlesh (c) Ravish (d) Giri

Direction (Q. No. 7) Read the following information carefully and answer the question that follows.

Three persons A, B and C wore shirts of black, blue and orange colours (not necessarily in that order) and pants of green yellow and orange colours (not necessarily in that order). No person wore shirt and pants of the same colour. Further, it is given that

I. A did not wear shirt of black colour.
II. B did not wear shirt of blue colour.
III. C did not wear shirt of orange colour.
IV. A did not wear pant of green colour.
V. B wore pants of orange colour.

7. What were the colours of the pant and shirt worn by C, respectively? **[UPSC (CSAT) 2012]**

(a) Orange and black (b) Green and blue (c) Yellow and blue (d) Yellow and black

Directions (Q. Nos. 8-10) Read the following information carefully and answer the questions given below. **[MAT 2013]**

Four youngmen namely Rajesh, Pran, Vinod and Arun are in love with four girls namely Shobhita, Kamla, Vimla and Promila. Shobhita and Vimla are good friends. Vinod's girlfriend does not like Shobhita and Vimla. Kamla does not care for Vinod. Pran's girlfriend is friendly with Shobhita. Shobhita does not like Rajesh.

8. Who is Rajesh's girlfriend?

(a) Shobhita
(b) Kamla
(c) Vimla
(d) Promila

9. Who is Promila's boyfriend?

(a) Arun (b) Pran (c) Vinod (d) Rajesh

10. Who is Arun's girlfriend?

(a) Promila (b) Vimla (c) Shobhita (d) Kamla

Directions (Q. Nos. 11-13) Examine carefully the following statements and answer the three items that follow. **[UPSC (CSAT) 2013]**

Out of four friends A, B, C and D

I. A and B play football and cricket.
II. B and C play cricket and hockey.
III. A and D play basketball and football.
IV. C and D play hockey and basketball.

11. Who does not play hockey?

(a) D (b) C (c) B (d) A

12. Who plays football, basketball and hockey?

(a) D (b) C (c) B (d) A

13. Which game do B, C and D play?

(a) Basketball
(b) Hockey
(c) Cricket
(d) Football

Directions (Q. Nos. 14-17) Read the following information carefully and answer the questions given below.

Four youngmen Anil, Mukesh, Piyush and Yogesh are lovingly called Munna, Babboo, Prince and Pappoo by everyone. They are married to Madhu, Sunanda, Jyoti and Arti.

I. Arti and Madhu are neither married to Piyush or Anil nor their husband is called Babboo.
II. Babboo is not married to Sunanda and his name is not Piyush.
III. Sunanda is not married to Munna.
IV. Mukesh is neither Munna nor Prince and is not married to Madhu.

14. Which of the following pair of husband-wife is not correct?

(a) Munna, Madhu (b) Babboo, Jyoti
(c) Pappoo, Jyoti (d) None of these

15. What is the nick name of Mukesh?

(a) Babboo (b) Pappoo (c) Munna (d) Prince

16. Who is the husband of Sunanda?

(a) Anil (b) Mukesh
(c) Piyush (d) Yogesh

17. Yogesh is married to whom?

(a) Sunanda (b) Arti
(c) Madhu (d) Jyoti

Directions (Q. Nos. 18-20) Answer the following questions based on the statements given below. **[CLAT 2013]**

I. There are 3 poles on each side of the road.
II. These six poles are labelled A, B, C, D, E and F.
III. The poles are of different colours namely golden, silver, metallic, black, bronze and white.
IV. The poles are of different heights.
V. E, the tallest pole, is exactly opposite to the golden coloured pole.
VI. The shortest pole is exactly opposite to the metallic coloured pole.
VII. F, the black coloured pole, is located between A and D.
VIII. C, the bronze coloured pole, is exactly opposite to A.
IX. B, the metallic coloured pole, is exactly opposite to F.
X. A, the white coloured pole, is taller than C but shorter than D and B.

18. What is the colour of the pole diagonally opposite to the bronze coloured pole?
(a) White
(b) Silver
(c) Metallic
(d) Golden

19. Which is the second tallest pole?
(a) A (b) D
(c) B (d) None of these

20. Which is the colour of the tallest pole?
(a) Golden (b) Silver
(c) Bronze (d) None of these

Directions (Q. Nos. 21-27) Read the following information carefully and answer the questions given below. **[Syndicate Bank (PO) 2009]**

A group of seven friends A, B, C, D, E, F and G work as economist, agriculture officer, IT officer, terminal operator, clerk, forex officer and research analyst, for banks L, M, N, P, Q, R and S but not necessarily in the same order. C works for bank N and is neither a research analyst nor a clerk. E is an IT officer and works for bank R. A works as a forex officer and does not work for bank L or Q. The one who is an agriculture officer works for bank M. The one who works for bank L works as a terminal operator. F works for bank Q. G works for bank P as a research analyst. D is not an agriculture officer.

21. Who amongst the following works as an agriculture officer?
(a) C (b) B (c) F (d) D
(e) None of these

22. For which bank does D work?
(a) Q (b) L (c) N (d) S
(e) None of these

23. What is the profession of C?
(a) Terminal operator (b) Agriculture officer
(c) Economist (d) Cannot be determined
(e) None of these

24. Who amongst the following works as a clerk?
(a) C (b) B (c) F (d) D
(e) None of these

25. Which of the following combinations of person, profession and bank is correct?
(a) A- Forex officer-M (b) D-Clerk-L
(c) F-Agriculture officer-Q (d) B-Agriculture officer-S
(e) None of these

26. What is the profession of the person who works for bank S?
(a) Clerk
(b) Agriculture officer
(c) Terminal operator
(d) Forex officer
(e) None of the above

27. For which bank does B work?
(a) M (b) S (c) L (d) Either M or S
(e) None of these

Directions (Q. Nos. 28-30) Read the following information carefully to answer these questions. **[MAT 2013]**

A kala manch has six performing ladies consisting of four vocal musicians, two dancers, one actress and three violinists. Gauri and Vandana are among the violinists while Jaya and Shailja do not know playing on violin. Shailja and Tanya are the dancers. Jaya, Shailja, Vandana and Tanya are all vocal musicians and two of them are also violinists. Pooja is an actress.

28. Who amongst these performing artists is both a vocalist and a violinist?
(a) Shailja
(b) Pooja
(c) Vandana
(d) Jaya

29. Who amongst these lady artists is a dancer, a vocal musician and a violinist?
(a) Shailja (b) Jaya (c) Tanya (d) Vandana

30. Who amongst these artists is a violinist only?
(a) Jaya (b) Tanya (c) Gauri (d) Shailja

31. A, B, C, D and E belong to five different cities P, Q, R, S and T (not necessarily in that order). Each one of them comes from a different city. Further it is given that

I. B and C do not belong to Q.
II. B and E do not belong to P and R.
III. A and C do not belong to R, S and T.
IV. D and E do not belong to Q and T.

Which one of the following statements is not correct?

[UPSC (CSAT) 2013]

(a) C belongs to P (b) D belongs to R (c) A belongs to Q (d) B belongs to S

Directions (Q. Nos. 32-35) Read the information carefully and then answer the questions given below.

Shalu, Charu, Lata, Tom and Sandy help themselves to take some sweets from bowl. Four of them each take a gulab jamun. Charu and Tom do not take a burfy as all the others do. Infact, Charu takes only one sweet, which is a laddu. Laddu is not taken by others apart from Charu, only Shalu and Sandy do not take peda.

32. Who only had a peda and a gulab jamun?

(a) Charu (b) Sandy
(c) Shalu (d) Tom

33. Who takes three sweets?

(a) Charu (b) Sandy
(c) Shalu (d) Lata

34. Who are the two people taking the same number and same type of sweets?

(a) Shalu and Lata (b) Sandy and Lata
(c) Shalu and Sandy (d) Tom and Sandy

35. In total, how many sweets were taken by the group?

(a) 11 (b) 12 (c) 9 (d) 10

Directions (Q. Nos. 36-38) Study the following information carefully and answer the given questions. [MAT 2012]

Seven persons namely Prem, Tirkey, Madan, Jagan, Virendar, Raghubir and Waris are good friends and are studying in MBA, engineering and medical courses. Three are doing MBA course, two are in engineering course and another two are in medical course. Each of them has a very distinct and favourite colour choice ranging from blue, red, yellow, white, black, pink and brown but not necessarily in the same orde. None doing MBA likes either red or black. Madan is doing engineering and he likes blue. Raghubir is doing medical and likes brown. Jagan is doing MBA and likes yellow. Prem who does not. like red is in the same discipline of Raghubir. Tirkey is in the same discipline of Madan. Virender does not like pink.

36. Which of the following groups is doing MBA?

(a) Jagan, Raghubir and Madan
(b) Virendar, Waris and Tirkey
(c) Jagan, Virendar and Waris
(d) Jagan, Prem and Raghubir

37. What is the colour combination choice of those who are in medical discipline?

(a) Brown and pink (b) Black and white
(c) Black and brown (d) Yellow and black

38. Which colour does Virendar like?

(a) Yellow (b) Pink (c) White (d) Brown

Directions (Q. Nos. 39-45) Study the following information carefully and answer the given questions. [SBI (PO) 2010]

Seven friends A, B, C, D, E, F and G studied in colleges X, Y and Z are currently in different professions, namely medicines, fashion designing, engineering, business, acting, teaching and architecture (not necessarily in the same order). Atleast two and not more than three friends had studied in the same college. C is an architect and studied in college Y. E is not a businessman. Only G amongst the seven friends studied in college X along with E. F is an engineer and did not study in college Y. B is an actor and did not study in the same college as F. A did not study in college Z. Those who studied in college X are neither fashion designers nor teachers. None of those who studied in college Y is a teacher.

39. Who amongst the following have studied in college Z?

(a) B, A (b) C, F (c) B, D, F (d) A, D
(e) D, F

40. Which of the following groups represents the students of college Y?

(a) C, E, G (b) A, C, D (c) A, B, C (d) D, B, C
(e) None of these

41. What is the profession of F?

(a) Engineering (b) Business (c) Medicines (d) Acting
(e) None of these

42. Who amongst the following is in the profession of medicine?

(a) E (b) G
(c) A (d) D
(e) None of these

43. What is the profession of A?

(a) Teaching
(b) Medicine
(c) Business
(d) Fashion designing
(e) None of the above

44. Which of the following combinations of person, college and profession is definitely correct?

(a) E-X-Fashion designing (b) F-X-Engineering
(c) A-Y-Businessman (d) D-Z-Teaching
(e) None of these

45. Who amongst the following is a teacher?

(a) A (b) D
(c) E (d) G
(e) None of these

Directions (Q. Nos. 46-48) Read the following information carefully and give answer of the questions based on this.

[CG PSC 2013]

Seven friends Anu, Beena, Kanika, Mohini, Samina, Easther and Rani study different disciplines such as Arts, Commerce, Science, Engineering, Architecture, Management and Pharmacy, not necessarily in the same order. Each of them belongs to a different state *viz.* Andhra Pradesh, Uttar Pradesh, Maharashtra, Karnataka, Kerala, Chhatisgarh and Punjab but not necessarily in the same order.

Kanika studies Engineering and does not belong to either Uttar Pradesh or Punjab. The one who belongs to Chhattisgarh does not study Architecture or Pharmacy. Anu belongs to Maharashtra. Samina belongs to Kerala and studies Science. The one who belongs to Andhra Pradesh studies Commerce. Mohini studies Management and Rani studies Arts. Beena belongs to Karnataka and does not study Architecture. The one who studies Arts does not belong to Punjab.

46. Which of the following student and subject combination is correct?

(a) Anu - Architecture (b) Easther - Pharmacy
(c) Beena - Commerce (d) Mohini - Engineering
(e) Samina-Management

47. Which of the following state-subject combination is/are correct?

I. Chhattisgarh - Engineering
II. Punjab - Pharmacy
III. Andhra Pradesh - Commerce
IV. Andhra Pradesh-Architecture

(a) I and II (b) II and III (c) I and IV (d) I and III
(e) III and IV

48. Which of the following student-state combination is/are correct?

I. Kanika - Chhattisgarh
II. Samina - Andhra Pradesh
III. Easther - Karnataka
IV. Mohini - Punjab

(a) I and II (b) I and III (c) I and IV (d) II and III
(e) II and IV

Directions (Q. Nos. 49-52) Read the following information carefully and then answer the questions given below it.

I. P, Q, R, S, T and U are six members of a family, each of them engaged in a different profession — doctor, lawyer, teacher, engineer, nurse and manager.
II. Each of them remains at home on a different day of the week from Monday to Saturday.
III. The lawyer in the family remains at home on Thursday.
IV. R remains at home on Tuesday.
V. P, a doctor, does not remain at home either on Saturday or Wednesday.
VI. S is neither the doctor nor the teacher and remains at home on Friday.
VII. Q is the engineer and T is the manager.

49. Which of the following combinations is not correct?

(a) R-Teacher (b) Q-Engineer
(c) T-Manager (d) All correct

50. Which of the following combinations is correct?

(a) Lawyer-Tuesday (b) Teacher-Wednesday
(c) Manager-Friday (d) Nurse-Friday

51. Who is the nurse?

(a) S (b) R
(c) U (d) Data inadequate

52. Who among them remains at home on the following day on which R stays at home?

(a) Q (b) Q or T
(c) S (d) Cannot be determined

Directions (Q. Nos. 53-55) Study the following information carefully and answer the questions given below.

[MAT 2012]

L, M, N, O and P are five important cities of our country out of which, three are industrial cities, two are port cities, one is a hill station and three cities have a university each. Every hill city has a university but has no port. 'O' is not a port city. No port city has a university. 'M' is a port city. Two industrial cities have universities and 'N' and 'O' are not industrial cities. The industrial cities with universities don't have ports. None of the industrial cities is a hill station. 'O' is a hill station and 'P' has a university.

53. Which city has industries as well as a port but does not have a university?

(a) L and O (b) O and M (c) M (d) N

54. Which city has neither industries nor a university nor a hill station?
(a) M (b) N (c) L (d) P

55. Which two cities have ports?
(a) L and M (b) M and N (c) N and O (d) N and P

Directions (Q. Nos. 56-60) Read the following information carefully and then answer the questions given below.
[Allahabad Bank (PO) 2004]

P, Q, R, S, T, W and Z are seven students studying in three different colleges A, B and C. There are three girls among them studying one each in each of these colleges. Two of them study mechanical engineering, two study medicine and one each study biotechnology, pharmacy and electrical engineering. R studies with only her best friend P who studies pharmacy in college B. No girl studies either biotechnology or electrical engineering. T studies mechanical engineering in college A and his brother W studies electrical engineering in college C. None of the two studying medicines in college B. S studies biotechnology along with T and Z.

56. In which of the colleges do three of them study?
(a) C (b) B
(c) A or C (d) Data inadequate
(e) None of these

57. Which of the following pairs of students study medicine?
(a) S, Z (b) Z, W (c) Z, Q (d) T, Q
(e) None of these

58. Which of the following is the field of study of Z?
(a) Medicine (b) Mechanical
(c) Electrical (d) Data inadequate
(e) None of these

59. Which of the following represent the three girls?
(a) S, Z, Q
(b) Z, R, Q
(c) S, R, Q
(d) Data inadequate
(e) None of the above

60. In which college does Q study?
(a) A
(b) B
(c) A or B
(d) C
(e) None of the above

Directions (Q. Nos. 61-65) Read the following information carefully and answer the questions based on them.

The staff of a bank are Mr A, Mr B, Mrs C, Miss D, Mr E and Miss F. The positions they occupy are manager, assistant manager, cashier, stenographer, teller and a clerk, though not necessarily in that order. The assistant manager is manager's grandson, cashier is stenographer's son-in-law. Mr A is bachelor. Miss D is teller's step sister and Mr E is manager's neighbour. Mr B cannot have a grandson or son-in-law as he is only 20 yr old.

61. Who is the manager?
(a) Mr A (b) Mrs C
(c) Mr E (d) None of these

62. Who is the assistant manager?
(a) Mr A (b) Miss F (c) Mrs C (d) Mr B

63. Who is the teller?
(a) Miss F (b) Mrs C (c) Mr A (d) Miss D

64. Who is the clerk?
(a) Mr B (b) Miss D
(c) Miss F (d) None of the above

65. Who is the cashier?
(a) Either Mr A or Mr B
(b) Miss F
(c) Mr B
(d) Mrs C

Directions (Q. Nos. 66-68) Read the following information carefully and then answer the questions based on them.
[MAT 2014]

The capital New Delhi is the seat of Power of the Central Government. It has over 50 renowned colleges to cater to the needs of 10+2 passed out candidates. The competition for admission still remains very tough. Students look for reputation of college, faculty, members, location, hostel facilities, past alumni and so on. Five studious and intelligent students who scored more than 94% in the XII board exam were asked to give their four options out of seven top colleges of Delhi. Their options in order of preference were as follows

Student A opted for U, Y, X and W. Student B for Z, V, X and T. Student C wanted to join V, W, Y and U. Student D desired admission in W, U, T and Z. Student E was keen for V, T, Y and X.

66. Which pair of students opted for colleges V and X but did not want to go to U and W?
(a) B and E (b) A and D (c) B and C (d) B and A

67. Which pair of students did not opted for college X but both of them opted for college U?
(a) A and C (b) B and C (c) C and D (d) D and E

68. Which student opted for colleges X and Y but did not opt for T and Z?
(a) D (b) C (c) B (d) A

Directions (Q. Nos. 69-71) Read the following information carefully and then answer the questions based on them. **[MAT 2014]**

Gurgaon is an important part of the National Capital Region (NCR Delhi) and is a very progressive town of Haryana State. Of late, it has come to be known as town of malls and high rise buildings. Now, it can easily be compared to Dubai. The malls in Gurgaon have bocome very popular and daily footfall is around 1 lakh which goes up to 1.5 lakh during first week of the month. A survey conducted on five prominent malls as to the four vital items on which the sale amounts to more than 60% of total revenue, revealed the following information. Mall A earns from ladies garments, artificial jewellery, cosmetics and electronics. Mall B earns mostly from furniture, cosmetics, sports and footwear. Mall C's greatest earnings are from electronics, sports, artificial jewellery and ladies garments. Mall D's main revenues are from furniture, footwear, ladies garments and cosmetics. Mall E's main earning departments are electronics, artificial jewellery, ladies garments and sports.

69. Which pair of malls earns mostly from electronic items and artificial jewellery but not from furniture and footwear?
(a) A and B (b) C and D (c) A and C (d) B and E

70. Which of the following malls earns most from sports and electronics but not from cosmetics and furniture?
(a) A (b) B (c) D (d) E

71. Which mall does not earn much from ladies garments and artificial jewellery but gets maximum from footwear and furniture?
(a) A (b) B (c) C (d) E

Directions (Q. Nos. 72-74) Read the following information carefully and then answer the questions based on them. **[CMAT 2014]**

Ravi and Kunal are good in hockey and volleyball. Sachin and Ravi are good in hockey and baseball. Gaurav and Kunal are good in volleyball and cricket. Sachin, Gaurav and Sagar are good in baseball and football.

72. Who is good in hockey, cricket and volleyball?
(a) Sachin (b) Kunal (c) Sagar (d) Ravi

73. Who is good in baseball, cricket, volleyball and football?
(a) Sachin (b) Kunal (c) Gaurav (d) Sagar

74. Who is good in football and baseball but not good in hockey, volleyball and cricket?
(a) Sagar (b) Sachin
(c) Ravi (d) Gaurav

Directions (Q. Nos. 75-79) Study the following information carefully and answer the questions given below. **[SBI (PO) 2013]**

Eight people—E, F, G, H, J, K, L and M are sitting around a circular table facing the centre. Each of them is of a different profession Chartered Accountant, Columnist, Doctor, Engineer, Financial Analyst, Lawyer, Professor and Scientist but not necessarily in the same order. F is sitting second to the left of K. The Scientist is an immediate neighbour of K. There are only three people between the Scientist and E. Only one person sits between the Engineer and E. The Columnist is to the immediate right of the Engineer. M is second to the right of K, H is the Scientist. G and J are immediate neighbours of each other. Neither G nor J is an Engineer, The Financial Analyst is to the immediate left of F, The Lawyer is second to the right of the Columnist. The Professor is an immediate neighbour of the Engineer. G is second to the right of the Chartered Accountant.

75. Who is sitting second to the right of E?
(a) Lawyer (b) G (c) Engineer (d) F
(e) K

76. Who amongst the following is the professor?
(a) F (b) L (c) M (d) K
(e) J

77. Four of the following five are alike in a certain way based on the given arrangement and hence form a group. Which of the following does not belong to that group?
(a) Chartered Accountant - H (b) M-Doctor
(c) J-Engineer (d) Financial Analyst-L
(e) Lawyer - K

78. What is the position of L with respect to the scientist?
(a) Third to the left
(b) Second to the right
(c) Second to the left
(d) Third to the right
(e) Immediate right

79. Which of the following statements is true according to the given arrangement?
(a) The Lawyer is second to the left of the Doctor
(b) E is an immediate neighbour of the Financial Analyst
(c) H sits exactly between F and the Financial Analyst
(d) Only four people sit between the Columnist and F
(e) All of the given statements are true

Response & Interpretations **(19.1)**

Solutions (Q. Nos. 1-3) *Following table can be drawn from the given information*

	Hockey	Volleyball	Tennis	Cricket	Football
Rajneesh	✓	✓	✓	✗	✗
Kavita	✓	✓	✗	✓	✗
Suresh	✓	✗	✓	✗	✓
Gambhir	✗	✓	✓	✓	✓
Mahesh	✗	✗	✓	✗	✓

1. (*c*) Kavita is good in hockey, volleyball and cricket.

2. (*d*) Gambhir is good in tennis, cricket, volleyball and football.

3. (*d*) Rajneesh is good in tennis, volleyball and hockey

Solutions (Q. Nos. 4-6) *Given information can be summarised in the following table*

	Hockey	Volleyball	Badminton	Chess	Football
Ravish	✓	✓	✓	✗	✗
Kamlesh	✓	✓	✗	✓	✗
Suresh	✓	✗	✓	✗	✓
Giri	✗	✓	✓	✓	✓
Mukesh	✗	✗	✓	✗	✓

4. (*b*) Kamlesh likes chess, hockey and volleyball.

5. (*c*) Giri likes badminton, chess, football and volleyball.

6. (*c*) Ravish likes hockey, volleyball and badminton.

Solution (Q. No. 7) *Following table can be drawn from the given information*

7. (*b*)

Persons	**Shirt**	**Pants**
A	Orange	Yellow
B	Black	Orange
C	Blue	Green

So, C wore green pant and blue shirt.

Solutions (Q. Nos. 8-10) *Following table can be drawn from the given information*

	Shobhita	Kamla	Vimla	Promila
Rajesh	✗	✓	✗	✗
Pran	✗	✗	✓	✗
Vinod	✗	✗	✗	✓
Arun	✓	✗	✗	✗

8. (*b*) Kamla is Rajesh's girlfriend.

9. (*c*) Vinod is Promila's boyfriend.

10. (*c*) Shobhita is Arun's girlfriend.

Solutions (Q. Nos. 11-13) *Following table can be drawn with the help of given information*

	Foot ball	Cricket	Hockey	Basketball
A	✓	✓	✗	✓
B	✓	✓	✓	✗
C	✗	✓	✓	✓
D	✓	✗	✓	✓

11. (*d*) From the above table, it is clear that A does not play hockey.

12. (*a*) It is clear from the above table that D plays football, basketball and hockey.

13. (*b*) From the above table, it is clear that B, C and D play hockey.

Solutions (Q. Nos. 14-17) *Following table can be drawn from the given information*

	Nickname				Wife			
	Munna	Babboo	Prince	Pappoo	Madhu	Sunanda	Jyoti	Arti
Anil	✗	✓	✗	✗	✗	✗	✓	✗
Mukesh	✗	✗	✗	✓	✗	✗	✗	✓
Piyush	✗	✗	✓	✗	✗	✓	✗	✗
Yogesh	✓	✗	✗	✗	✓	✗	✗	✗

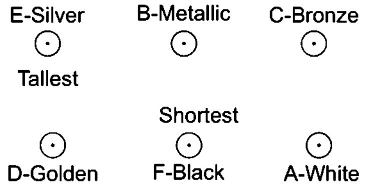
14. (*c*) From the truth table, we find that Pappoo (Mukesh) is married to Arti.

15. (*b*) The nickname of Mukesh is Pappoo.

16. (*c*) Sunanda is married to Piyush

17. (*c*) Yogesh is married to Madhu.

Solutions (Q. Nos. 18-20)



Also, E > B, D > A > C > F

18. (*d*) Pole D with golden colour is diagonally opposite to bronze coloured pole.

19. (*d*) As comparison between B and D is not given so it cannot be determined which is second tallest pole.

20. (*b*) Tallest pole is of silver colour.

Solutions (Q. Nos. 21-27) *Following table can be drawn from the given information*

Friend	**Profession**	**Bank**
A	Forex officer	S
B	Agriculture officer	M
C	Economist	N
D	Terminal operator	L
E	IT officer	R
F	Clerk	Q
G	Research analyst	P

21. (*b*) B is an agriculture officer.

22. (*b*) D works with bank L.

23. (*c*) C is an economist.

24. (*c*) F is a clerk.

25. (*e*) None of the given options is correct.

26. (*d*) A is a forex officer and works with bank S.

27. (*a*) B works with bank M.

Solutions (Q. Nos. 28-30) *Following table can be drawn from the given information*

		Vocal		
	Dancer	**Musician**	**Actress**	**Violinist**
Gauri	✗	✗	✗	✓
Vandana	✗	✓	✗	✓
Shailja	✓	✓	✗	✗
Tanya	✓	✓	✗	✓
Jaya	✗	✓	✗	✗
Pooja	✗	✗	✓	✗

28. (*c*) From the table, it is clear that Vandana is both a vocalist and a violinist.

29. (*c*) From the table, it is clear that Tanya is a dancer, a vocal musician and a violinist.

30. (*c*) From the table, it is clear that Gauri is a violinist only.

Solution (Q. No. 31) *From the given information, following table can be drawn*

31. (*d*)

Cities	P	Q	R	S	T
A	✗	✓	✗	✗	✗
B	✗	✗	✗	✗	✓
C	✓	✗	✗	✗	✗
D	✗	✗	✓	✗	✗
E	✗	✗	✗	✓	✗

Now, it is clear from the above table that B does not belong to S. So, statement (d) is incorrect.

Solutions (Q. Nos. 32-35) *Following table can be drawn from the given information*

Name	Gulab	Burfy	Laddu	Peda
Shalu	✓	✓	✗	✗
Charu	✗	✗	✓	✗
Lata	✓	✓	✗	✓
Tom	✓	✗	✗	✓
Sandy	✓	✓	✗	✗

32. (*d*) Tom took a peda and gulab jamun.

33. (*d*) Lata took gulab jamun, burfy and peda.

34. (*c*) Shalu and Sandy took gulab jamun and burfy.

35. (*d*) In total 10 sweets were taken by the group.

Solutions (Q. Nos. 36-38) *Following table can be drawn from the given information*

Persons	Courses	Colours
Prem	Medical	Black
Tirkey	Engineering	Red
Madan	Engineering	Blue
Jagan	MBA	Yellow
Virendar	MBA	White
Raghubir	Medical	Brown
Waris	MBA	Pink

36. (*c*) Jagan, Virendar and Waris are doing MBA.

37. (*c*) Medical persons choice of colours are black and brown.

38. (*c*) Virendar likes white colour.

Solutions (Q. Nos. 39-45) *Following table can be drawn from the given information*

Friend	College	Profession
A	Y	Fashion
B	Y	Acting
C	Y	Architecture
D	Z	Teaching
E	X	Medicine
F	Z	Engineering
G	X	Business

39. (*e*) D and F studied in College Z.

40. (*c*) A, B and C represent group of students of college Y.

41. (*a*) F is an engineer.

42. (*a*) E is in the profession of medicine.

43. (*d*) A is a fashion designer.

44. (*d*) Correct combination = D - Z - Teaching

45. (*b*) D is a teacher.

Solutions (Q. Nos. 46-48) *Following table can be drawn from the given instructions*

Friends				**Discipline**							**States**			
	Arts	**Commerce**	**Science**	**Engineering**	**Architecture**	**Management**	**Pharmacy**	**AP**	**UP**	**Maharashtra**	**Karnataka**	**Kerala**	**Chattisgarh**	**Punjab**
Anu	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗
Beena	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗
Kanika	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗
Mohini	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✓
Samina	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗
Easther	✗	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗
Rani	✓	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗

46. (*a*) Anu - Architecture is the correct combination.

47. (*d*) Both I and III combinations are correct.

48. (*c*) Both I and IV combinations are correct.

Solutions (Q. Nos. 49 -52) *Following table can be drawn from the given information*

	Professions						**Days**					
	Doct	**Law**	**Teach**	**Engg**	**Nurse**	**Mag**	**Mon**	**Tues**	**Wed**	**Thurs**	**Fri**	**Sat**
P	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗
Q	✗	✗	✗	✓	✗	✗	✗	✗	✓	✗	✗	✓
R	✗	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗
S	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✓	✗
T	✗	✗	✗	✗	✗	✓	✗	✗	✓	✗	✗	✓
U	✗	✓	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗

From the table, we find that Q, the engineer and T, the manager live at home either on Wednesday or Saturday.

49. (*d*) It is concluded clearly from the above table that all the combinations given are correct.

50. (*d*) From the table it is clear that S is the nurse and stays at home on Friday.

51. (*a*) S is the nurse.

52. (*b*) R stays at home on Tuesday and from the table, any one of Q or T stays at home following the day on which R stays at home *i.e.*, on Wednesday.

Solutions (Q. Nos. 53-55) *Following table can be drawn from the given information*

Important cities	Industrial city	Port city	Hill station	University
L	✓	✗	✗	✓
M	✓	✓	✗	✗
N	✗	✓	✗	✗
O	✗	✗	✓	✓
P	✓	✗	✗	✓

53. (*c*) M city has industry as well as port but does not has a university.

54. (*b*) N city has neither industries nor a university nor a hill station.

55. (*b*) M and N cities have ports.

Solutions (Q. Nos. 56-60) *Following table can be drawn from the given information*

Students	College	Sex	Subjects
P	B	Boy	Pharmacy
Q	C	Girl	Medicine
R	B	Girl	Mech Engg
S	A	Boy	Biotech
T	A	Boy	Mech Engg
W	C	Boy	Elec Engg
Z	A	Girl	Medicine

56. (*e*) Three of them study in college A.

57. (*c*) Z and Q study medicine.

58. (*a*) Z studies medicine.

59. (*b*) Group of Q, R and Z is the group of girls.

60. (*d*) Q studies in college C.

Solutions (Q. Nos. 61-65) *Following table can be drawn from the given information*

	Manager	Asstt. manager	Cashier	Steno	Clerk	Teller
Mr A	✗	✓	✗	✗	✗	✗
Mr B	✗	✗	✓	✗	✗	✗
Mrs C	✓	✗	✗	✗	✗	✗
Miss D	✗	✗	✗	✗	✓	✗
Mr E	✗	✗	✗	✓	✗	✗
Miss F	✗	✗	✗	✗	✗	✓

Since, the assistant manager is manager's grandson, hence assistant manager is a male and cannot be Mrs C, Miss D or Miss F. Secondly, manager is a married person and hence cannot be Miss D or Miss F.

Cashier is stenographer's son-in-law. It means that cashier is a married male and hence cannot be either Mrs C or Miss D or Miss F. Consequently, stenographer is a married person and hence cannot be either Miss D or Miss F.

Miss D is teller's step sister, it means that Miss D cannot be teller and hence Miss D is a clerk.

Mr A is a bachelor, therefore he cannot be any one of cashier, stenographer or manager.

Mr B cannot have a grandson or son-in-law. Therefore, Mr B can be neither manager nor stenographer.

Mr E is manager's neighbour. Therefore, Mr E cannot be the manager. After putting these information in the table, we get the respective professions of Mr A, Mr B, Mrs C, Miss D, Mr E and Miss F as in the table above.

61. (*b*) From the table, we get Mrs C as the manager.

62. (*a*) Mr A is the assistant manager.

63. (*a*) Miss F is the teller.

64. (*b*) Miss D is the clerk.

65. (*c*) Mr B is the cashier.

Solutions (Q. Nos. 66-68) *Following table can be drawn from the given information*

	Preference of Colleges			
	I	II	III	IV
A	U	Y	X	W
B	Z	V	X	T
C	V	W	Y	U
D	W	U	T	Z
E	V	T	Y	X

66. (*a*) B and E

67. (*c*) C and D

68. (*d*) A

Solutions (Q. Nos. 69-71) *Data is arranged as follows*

Mall A	Ladies garments, artifical jewellery, cosmetics and electronics.
Mall B	Furniture, cosmetics, sports and footwear.
Mall C	Electronics, sports, artifical jewellery and ladies garments.
Mall D	Furniture, footwear, ladies garments and cosmetics.
Mall E	Electronics, artificial jewellary, ladies garments and sports.

69. (*c*) Malls A and C earn mostly from electronics items and artificial jewellery but not from furniture and footwear.

70. (*d*) Mall E earns most from sports and electronics but not from cosmetics and furniture.

71. (*b*) Mall B does not earn much from ladies garments and artificial jewellery but gets maximum from footwear and furniture.

Solutions (Q. Nos. 72-74) *Following table can be drawn from the given information*

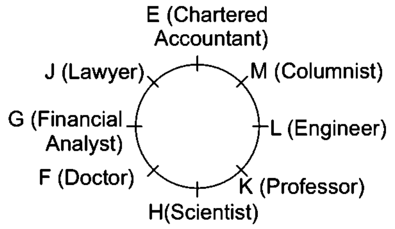
	Hockey	Volleyball	Baseball	Cricket	Football
Ravi	✓	✓	✓	✗	✗
Kunal	✓	✓	✗	✓	✗
Sachin	✓	✗	✓	✗	✓
Gaurav	✗	✓	✓	✓	✓
Sagar	✗	✗	✓	✗	✓

72. (*b*) Kunal is good in hockey, cricket and volleyball.

73. (*c*) Gaurav is good in baseball, cricket, volleyball and football.

74. (*a*) Sagar is good in baseball and football but not in hockey, volleyball and cricket.

Solutions (Q. Nos. 75-79)



75. (*b*) G is sitting second to the right of E.

76. (*d*) K is the professor.

77. (*c*) Except J-Engineer, in all other options, there are three persons between first and second person.

78. (*b*) The position of L with respect to the scientist is second to the right.

79. (*a*) Only Statement (a) is true.

Type 2 Puzzles Based on Conditioning, Grouping and Team Formation

This type of puzzles contains a paragraph of information which is in jumbled format and the candidate is required to unjumble those statements and decipher the proper meaning from the paragraph to determine the answer. In these type of questions, conditions regarding the selection or non-selection of persons or objects are given with respect to one another. On the basis of this information, team selection can be made to answer the questions.

Following examples will give you a better idea about the questions asked

Directions (Example Nos. 10-12) Read the following information carefully to answer the questions that follow.

A combination of three colours is being chosen to decorate a room. The colour must be chosen from a group of seven colours— A, B, C, D, E, F and G according to the following conditions.

I. If A or B is chosen, the other must also be chosen.
II. C and D cannot be chosen together.
III. Either C or A or both must be chosen.

Ex **10** Which of the following combination of colours confirms to the conditions?

(a) A, C, D (b) A, E, F (c) B, C, G (d) C, E, G

Ex **11** If D is chosen, which of the following pair of colours must also be chosen?

(a) A and B (b) A and G (c) B and C (d) C and E

Ex **12** If E is chosen, which of the following pair of colours could also be chosen?

(a) A and C (b) A and F (c) B and C (d) C and F

Solutions (Example Nos. 10-12) *The question is entirely different from the earlier questions of this type and therefore, methods for solution discussed so far will not provide much help for its solution. The main difference in this question is that, according to set of conditions given in the questions, there may be more than one valid combination which may confirm to the given condition. Hence, our answer will vary according to the question asked.*

10. (*d*) In this question, option (a) violates condition (i), option (b) violates condition (i), option (c) violates condition (i), option (d) complies with all the conditions.

11. (*a*) If D is chosen, C cannot be chosen. So, alternatives (c) and (d) are rejected. If A is chosen, B has to be chosen, so alternative (b) is rejected. Option (a) complies with all the conditions.

12. (*d*) Alternatives (a), (b) and (c) violate condition (i). Option (d) complies with all the conditions.

Directions (Example Nos. 13-17) Read the following information to answer the questions given below.

From a group of six boys M, N, O, P, Q and R and five girls G, H, I, J and K a team of six is to be selected. Some of the criteria of selection are as follows

I. M and J go together.
II. O cannot be placed with N.
III. I cannot go with J.
IV. N goes with H.
V. P and Q have to be together.
VI. K and R go together.
VII. Unless otherwise stated these criteria are applicable to all the following questions.

***Ex* 13** **If the team consists of two girls and I is one of them, the other members are**
(a) GMRPQ (b) KOPQR (c) HNOPQ (d) KRMNP

***Ex* 14** **If the team has four boys including O and R, the members of the team other than O and R are**
(a) HIPQ (b) GJPQ (c) GKPQ (d) GJMP

***Ex* 15** **If four members are boys, which of the following cannot constitute the team?**
(a) GJMOPQ (b) JKMNOR (c) HJMNPQ (d) JKMPQR

***Ex* 16** **If both K and P are members of the team and three boys in all are included in the team, the members of the team other than K and P are**
(a) GIRQ (b) HIRQ (c) GJRM (d) IJRQ

***Ex* 17** **If the team has three girls including J and K, the members of the team other than J and K are**
(a) GHNR (b) MORG (c) MNOG (d) NHOR

Solutions (Example Nos. 13-17)

13. (*b*) With M, J is necessary *i.e.,* (a) is not possible. Either N or O is selected. Hence, (c) is not possible. With N, H is necessary. Hence, (d) is not possible. Only option (b) complies with all the conditions.

14. (c) With R, K is necessary. Hence, (a), (b) and (d) are not possible.

15. (*b*) O cannot be with N. Hence, (b) is not possible.

16. (*a*) Since, H and N must be together, so (b) is not possible. P and Q must be together. Hence, (c) is not possible. Since, I cannot go with J, hence (d) is not possible. Only option (a) complies with all the conditions.

17. (*b*) G, H, J and K are four girls, so (a) is not possible. O and N do not want to be together. So, (c) and (d) are not possible. Only option (b) complies with all the conditions.

Practice Corner **19.2**

Build your Confidence...

Directions (Q. Nos. 1-3) Read the following information carefully to answer the questions that follow. **[MAT 2013]**

There are six students J, K, L, M, N and O, J and K belong to Priya Palace and the rest belong to Nisha Palace. M and O are tall while other students are short. J, L and M are identified by wearing jeans while others are wearing caps.

1. Which two students are not wearing jeans and are short?
(a) L and N
(b) K and N
(c) J and N
(d) K and O

2. Which short student of Nisha Palace is wearing a cap?
(a) O (b) L (c) M (d) N

3. Which tall student of Nisha Palace is wearing jeans?
(a) O (b) N (c) M (d) L

Directions (Q. Nos. 4-6) Read the following passage and answer the question that follow. **[UPSC (CSAT) 2013]**

A tennis coach is trying to put together a team of four players for the forthcoming tournament. For this 7 players are available males A, B and C and females W, X, Y and Z. All players have equal capability and atleast 2 males will be there in the team. For a team of four, all players must be able to play with each other. But, B cannot play with W, C cannot play with Z and W cannot play with Y.

4. If Y is selected and B is rejected, the team will consist of which one of the following groups?
(a) A, C, W and Y (b) A, C, X and Y
(c) A, C, Y and Z (d) A, W, Y and Z

5. If all the three males' are selected, then how many combinations of four member teams are possible?
(a) 1 (b) 2
(c) 3 (d) 4

6. If B is selected and Y is rejected, the team will consist of which one of the following groups?
(a) A, B, C and W (b) A, B, C and Z
(c) A, B, C and X (d) A, W, Y and Z

Directions (Q. Nos. 7-9) Read the following information carefully and then answer the questions based on them. **[FMS 2011]**

In a cycling race, five participants from various nations-Chinese, Nepalese, Indian, Iraqi and English take part. Track 1 is extreme left and track 5 is extreme right. The following conditions exist

I. The Nepalese and English are not cycling adjacent to each other.
II. The Iraqi is not in any of the extreme tracks.
III. The Chinese is to the left of the Indian.

7. If the Nepalese is in track 3, the Chinese in track 1, then the Indian could be in
(a) track 4 (b) track 2
(c) track 2 or 4 (d) None of the above

8. If the Nepalese is in track 4 and the Indian is in track 3, then the English could be in
(a) track 1 (b) track 2
(c) track 1 or 2 (d) None of these

9. If the Iraqi is to the left of the Chinese, then the Iraqi could be in
(a) only track 2 (b) only track 3
(c) track 2 or 3 (d) None of these

Directions (Q. Nos. 10-14) Read the following information carefully to answer the questions that follow.

Nine professors — G, H, I, J, K, L, M, N and O are appear on a series of three panels. Each panel will consists of three professors and each professor will appear exactly once. The panel must be arranged according to the following conditions.

I. I and N must be on the same panel.
II. K and L must be on the same panel.
III. O and J cannot be on the same panel.
IV. M must appear on the second panel.
V. Either J or M or both must appear on the panel with H.

10. Which of the following professors could appear on a panel together?
(a) G, L, O (b) G, J, M
(c) K, I, M (d) N, I, J

11. Which of the following cannot be true?
(a) I appears on 2nd panel
(b) H appears on 3rd panel
(c) O appears on 3rd panel
(d) J appears on 1st panel and H appears on the 3rd

12. The 3rd panel could consist of all the following except
(a) K, L, O (b) K, L, J (c) G, H, J (d) G, I, J

13. All the following could be on the same panel as K, except
(a) G (b) I (c) J (d) M

14. If J and K appear on the 3rd panel, which of the following professors must appear on 2nd?
(a) G (b) H
(c) I (d) L

Directions (Q. Nos. 15-16) Read the following informations to answer the questions that follow. **[SNAP 2010]**

Seven people A, B, C, D, E, F and G are planning to enjoy boating. There are only two boats and the following conditions are to be kept in mind.

I. A will go in the same boat in which E is to go.
II. F cannot go in the boat in which C unless D is also accompanying.
III. Neither B nor C can be given the boat in which G is.
IV. The maximum number of persons in one boat can be four only.

15. If F and B are in one boat, which of the following statements is true?
(a) G is in the other boat
(b) D is in the other boat
(c) C is in the other boat
(d) E is with F and B in one boat

16. If E gets boat with F, which of the following is the complete and accurate list of the people who must be sitting in other boat?
(a) F and E (b) G and A
(c) D and A (d) C, D and B

Directions (Q. Nos. 17-21) Read the following information carefully and then answer the questions based on that.

From amongst five doctors A, B, C, D and E, four engineers G, H, K and L and six teachers M, N, O, P, Q and R, some teams are to be selected. Of these A, B, G, H, O, P and Q are females and the rest are males. The formation of teams is subject to the following conditions.

I. Whenever there is a male doctor, there will be no female teacher.
II. Whenever there is a male engineer, there will be no female doctor.
III. There shall not be more than two male teachers in any team.

17. If the team consists of two doctors, two female teachers and two engineers, all the following teams are possible except
(a) OPGHAB (b) ABGHPQ (c) ABGHOQ (d) ABKLPQ

18. If the team consists of two doctors, three female teachers and two engineers, the members of the team are
(a) CDOPQGH
(b) ABOPQGH
(c) CDKLOPQ
(d) DEGHOPQ

19. If the team consists of three doctors, two male engineers and two teachers, the members of the team could be
(a) CDEKLMN (b) ABCKLMR (c) CDEKLPR (d) BCDKLNR

20. If the team consists of two doctors, one engineer and four teachers, all the following teams are possible except
(a) ABGMNOP (b) ABKNRPQ (c) ABHMOPQ (d) ABHMRPQ

21. If the team consists of two doctors, two engineers and two teachers, all the following teams are possible except
(a) CEKLMN (b) ABGHMN (c) CDKLOP (d) ABGHOP

Directions (Q. Nos. 22-26) Study the following information carefully and answer the questions given below. **[IBPS (PO) 2011]**

P, Q, R. S, T, V, W and Z are going to three destinations Delhi, Chennai and Hyderabad in three different vehicles - Honda City, Swift D'Zire and Ford Ikon. There are three females among them-one in each car. There are atleast two persons in each car. R is not travelling with Q and W. T, a male, is travelling with only Z and they are not going to Chennai. P is travelling in Honda City and is going to Hyderabad. S is the sister of P and is travelling by Ford Ikon. V and R are travelling together. W is not going to Chennai.

22. Members of which of the following cars are going to Chennai?
(a) Honda City
(b) Swift D' Zire
(c) Ford Ikon
(d) Either Swift D'Zire or Ford Ikon
(e) None of the above

23. In which car are four members travelling?
(a) None (b) Honda City (c) Swift D'Zire (d) Ford Ikon
(e) Either Honda City or Ford Ikon

24. Which of the following combinations represents the three female members?
(a) QSZ (b) WSZ
(c) PSZ (d) Cannot be determined
(e) None of these

25. Who is travelling with W?

(a) Only Q
(b) Only P
(c) Both P and Q
(d) Cannot be determined
(e) None of the above

26. Members of which of the following combinations are travelling in Honda City?

(a) PRS
(b) PQW
(c) PWS
(d) Data inadequate
(e) None of these

Directions (Q. Nos. 27-29) These are based on a set of conditions in answering some of the questions, it may be useful to draw a rough diagram. Choose the response that most accurately and completely answers each question. **[XAT 2010]**

In a local pen store, seven puppies wait to be introduced to their new owners. The puppies named as Ashlen, Blackley, Custard, Daffy, Earl, Fala and Gabino are all kept in two available pen. Pen 1, holds three puppies and pen 2 holds four puppies.

I. If Gabino is kept in pen 1, then Daffy is not kept in pen 2.
II. If Daffy is not kept in pen 2, then Gabino is kept in pen 1.
III. If Ashlen is kept in pen 2, then Blackley is not kept in pen 2.
IV. If Blackley is kept in pen 1, then Ashlen is not kept in pen1.

27. Which of the following group of puppies could be in pen 2?

(a) Gabino, Ashlen, Custard, Earl
(b) Blackley, Gabino, Ashlen, Daffy
(c) Ashlen, Gabino, Earl, Custard
(d) Blackley, Custard, Earl, Fala
(e) Gabino, Ashlen, Fala, Earl

28. If Earl shares a pen with Fala, then which of the following must be true?

(a) Gabino is in pen 1 with Daffy
(b) Custard is in pen 2
(c) Blackley is in pen 2 and Fala is in pen 1
(d) Earl is in pen 1
(e) Gabino shares a pen with Blackley

29. If Earl and Fala are in different pens, then which of the following must not be true?

(a) Fala shares a pen with Custard
(b) Gabino shares a pen with Ashlen
(c) Earl is in a higher numbered pen than Blackley
(d) Blackley shares pen 2 with Earl and Daffy
(e) Custard is in a highered numbered pen with Blackley

Directions (Q. Nos. 30-34) Read the information carefully and then answer the questions based on that. **[SBI (Clerk) 2012]**

At an electronic data processing unit, five out of the eight programme sets P, Q, R, S, T, U,V and W are to be operated daily. On anyone day, except for 1st day of the month, only three of the programme sets must be the ones that were operated on the previous day. The programme operation must also satisfy the following conditions.

I. If programme P is to be operated on a day, V cannot be operated on that day.
II. If Q is to be operated on a day, T must be one of the programmes to be operated after Q.
III. If R is to be operated on a day, V must be one of the programmes to be operated after R.
IV. The last programme to be operated on any day must be either S or U.

30. Which of the following is true of any day's valid programme set operation?

(a) P cannot be operated at 3rd place
(b) Q cannot be operated at 3rd place
(c) T cannot be operated at 3rd place
(d) R cannot be operated at 4th place
(e) U cannot be operated at 4th place

31. If the programme sets R and W are to be operated on 1st day, which of the following could be the other programmes on that day?

(a) P, T, U
(b) Q, S, V
(c) Q, T, V
(d) T, S, U
(e) V, S, U

32. If the programme sets operated on a day are P, Q, W, T and U, then each of the following could be the next day's programme set except

(a) Q, R, V, T, U
(b) Q, T, V, W, S
(c) W, T, U, V, S
(d) W, R, V, T, U
(e) W, T, S, P, U

33. Which of the following could be the set of programme to be operated on the 1st day of a month?

(a) P, R, V, S, U (b) Q, S, R, V, U (c) T, U, R, V, S (d) U, Q, S, T, W
(e) V, Q, R, T, S.

34. If R is operated at 3rd place in a sequence, which of the following cannot be 2nd programme in that sequence?

(a) Q (b) S (c) T (d) U
(e) W

Directions (Q. Nos. 35-37) Read the following informations carefully to answer the questions that follow. **[XAT 2011]**

Mrs Sharma has a house which she wants to convert to a hostel and rent it out to students of a nearby women's college. The house is a two storey building and each floor has eight rooms. When one looks from the outside, three rooms are found facing North, three found facing East, three found facing West and three found facing South. Expecting a certain number of students, Mrs Sharma wanted to follow certain rules while giving the 16 rooms on rent.

I. All sixteen rooms must be occupied.
II. No room can be occupied by more than three students.
III. Six rooms facing North is called North wing. Similarly, six rooms facing East, West and South are called as East wing, West wing and South wing. Each corner room would be in more than one wing. Each of the wings must have exactly 11 students. The first floor must have twice as many students as the ground floor.
IV. However, Mrs Sharma found that three fewer students have come to rent the rooms. Still, Mrs Sharma could manage to allocate the rooms according to the rules.

35. How many students turned up for renting the rooms?
(a) 24 (b) 27 (c) 30 (d) 33
(e) None of these

36. If Mrs Sharma allocates the North-West corner room on the ground floor to 2 students, then the number of students in the corresponding room on the first floor and the number of students in the middle room in the first floor of the East wing are
(a) 2 and 1 respectively(b) 3 and 1 respectively
(c) 3 and 2 respectively
(d) Both should have 3 students
(e) Such an arrangement is not possible

37. If all the students that Mrs Sharma expected initially had come to rent the rooms and if Mrs Sharma had allocated the North-West corner room in the ground floor to 1 student, then the number of students in the corresponding room on the first floor and the number of students in the middle room in the first floor of the East wing would have been
(a) 1 and 2 respectively
(b) 2 and 3 respectively
(c) 3 and 1 respectively
(d) Both should have students
(e) Such an arrangement is not possible

Directions (Q. Nos. 38-40) Read the following informations carefully to answer the questions that follow. **[MAT 2014]**

Surinder, Prem, Wasim, Bishamber and Chauhan are five players of a college cricket team and their home towns are Sikandrabad, Panipat, Warangal, Banaras and Chennai (not in the order of their names). The five specialist slots of spinner, pace-bowler, wicket-keeper, batsman and captain are held by them (not in order of their names stated above). Their names, home towns and specialities don't start with the same letter. Neither Prem nor Wasim is the captain and they don't belong to either Sikandrabad or Banaras. Panipat is not Bishamber's home town. The player who hails from Banaras is a wicket-keeper. The captain's home town is Panipat while the batsman does not hail from Warangal. Surinder is neither a wicket-keeper nor a batsman.

38. Who is the wicket-keeper?
(a) Wasim (b) Bishamber (c) Chauhan (d) Surinder

39. The spinner's home town is
(a) Chennai (b) Banaras (c) Warangal (d) Panipat

40. Who is the pace bowler?
(a) Prem
(b) Bishamber
(c) Surinder
(d) Chauhan

Directions (Q. Nos. 41-43) Read the following informations carefully to answer the questions that follow. **[MAT 2014]**

There were four paritcipants form Delhi, UP, Jharkhand and MP taking part in a beauty contest.

I. All the participants were sitting in a row.
II. All of them were wearing sarees of different colours *i.e.,* blue, black, orange and red.
III. One who was wearing the black saree won the contest.
IV. There was one runner up and she was sitting beside Miss MP. The runner up was wearing blue saree.
V. Miss Jharkhand was not seated on the extreme ends and was not the runner up.
VI. The winner and the runner up were not seated adjacent to each other.
VII. Miss MP was wearing the orange saree.
VIII. Miss Delhi was not wearing the blue saree.
IX. Participants wearing black saree and orange saree were seated at the extreme ends.

41. Who was the runner up?
(a) Miss Delhi (b) Miss MP
(c) Miss UP (d) Miss Jharkahnd

42. Which saree was worn by Miss Delhi?
(a) Blue (b) Black (c) Orange (d) Red

43. Who was wearing the red saree?
(a) Miss Jharkhand
(b) Miss UP
(c) Miss Delhi
(d) Miss MP

Response & Interpretations **(19.2)**

Solutions (Q. Nos. 1-3) *Following table can be drawn from the given information*

Requirement /Students	Priya	Nisha	Tall	Short	Jeans	Caps
J	✓	✗	✗	✓	✓	✗
K	✓	✗	✗	✓	✗	✓
L	✗	✓	✗	✓	✓	✗
M	✗	✓	✓	✗	✓	✗
N	✗	✓	✗	✓	✗	✓
O	✗	✓	✓	✗	✗	✓

1. (*b*) From the above table, we see that the two students who are not wearing jeans and are short K and N.

2. (*d*) The student who is short and is from Nisha Palace and wearing a cap is N.

3. (*c*) The tall student from Nisha Palace who is wearing jeans is M.

Solutions (Q. Nos. 4-6) *From the given information, first we make a table of non-togetherness of players*

Males			Females			
A	B	C	W	X	Y	Z
	✓		✗			
		✓				✗
			✓		✗	

4. (*b*) From the question, it is clear that B is rejected. It means, from among males, A and C must be the part of team as it is given that atleast two males must be there in the team. Now, from the given table, it is clear that if C is selected Z must be rejected. So, Z must not be the part of team. It is also given in question that Y is selected. From the above table, it is clear that if Y is selected W must be rejected. So, from females, X and Y will be the part of the team. As a result, the team will consist of A, C, X and Y.

5. (*c*) Here, it is given that B is selected. It means that W is rejected and also Y is rejected is given. Now, there are two possibilities of formation of team—ABXZ and ABCX. But from the options given ABCX will be the required team.

6. (*b*) If all the three males are selected, there are two possibilities of team formation *i.e.,* ABCX and ABCY.

7. (*c*) According to the question and given conditions, the arrangement is as follows

Track 1	Track 2	Track 3	Track 4	Track 5
Chinese	Indian/Iraqi	Nepalese	Indian/Iraqi	English

Clearly, Indian could be in Track 2 or 4.

8. (*d*) According to the question and given conditions, the arrangement is as follows

Track 1	Track 2	Track 3	Track 4	Track 5
		Indian	Nepalese	

Now, from condition I, the English should be in track 1 or track 2.

From condition III, the Chinese should be in track 1 or track 2. Hence, Iraqi will be in track 5. But this violates condition II.

9. (*a*) According to the question and given conditions, the arrangement is as follows

Track 1	Track 2	Track 3	Track 4	Track 5
English/Nepalese	Iraqi	Chinese	Indian	English/Nepalese

Clearly, Iraqi could be on track 2.

10. (*d*) Option (a) G, L, O - violates condition II
Option (b) G, J, M - violates condition IV
Option (c) K, I, M - violates condition I
Option (d) N, I, J - complies with all the conditions.

11. (*d*) Since, M must appear on the second panel (condition IV), J will have to appear alongwith H on 3rd panel. Therefore, both J and H cannot appear on different panels.

12. (*d*) Combination of G, J and I violates condition I, which requires the combination of I with N.

13. (*b*) If one of the panelists is K, other would be L as given in condition II, I cannot appear with K and L because I always appears with N [refer condition I] and there cannot be more than three panelists.

14. (*b*) If J and K appear on 3rd panel, then 3rd professor with them would be L, hence professors (J, K, L) would appear on 3rd Panel. Now, according to given condition IV one of the professors on panel on the 2nd day is M, then one of the professors with M would definitely be H [refer condition V].

15. (*a*) According to the question and given conditions, the possible cases are as follows

Case I $\frac{\text{Boat 1}}{\text{B, C, D, F}} + \frac{\text{Boat 2}}{\text{A, E, G}}$

Case II $\frac{\text{Boat 1}}{\text{A, E, G}} + \frac{\text{Boat 2}}{\text{B, C, D, F}}$

Clearly, G is in other boat. If B, C, D and F are in boat 1, then G is in boat 2 and if B, C, D and F are in boat 2, then G is in boat 1.

16. (*d*) According to the question and conditions, the possible cases are as follows

Case I $\frac{\text{Boat 1}}{\text{E, F, A, G}} + \frac{\text{Boat 2}}{\text{C, D, B}}$

Case II $\frac{\text{Boat 1}}{\text{C, D, B}} + \frac{\text{Boat 2}}{\text{E, F, A, G}}$

Clearly, in either case C, D and B are in other boat.

17. (*d*) Option (d) : A B K L P Q violates condition II because female doctors A, B cannot appear with male engineers K, L.

18. (*b*) Option (a) : C D O P Q G H - violates condition I.
Option (b) : A B O P Q G H - complies with all the conditions.
Option (c) : C D K L O P Q - violates condition I
Option (d) : D E G H O P Q - violates condition I
Clearly, the required team = A, B, O, P, Q, G, H

19. (*a*) Option (a) : C D E K L M N - complies with all the conditions
Option (b) : A B C K L M R - violates condition II
Option (c) : C D E K L P R - violates condition I
Option (d) : B C D K L N R - violates condition II

Clearly, the required team = C D E K L M N

20. (*b*) A B K N R P Q cannot be an acceptable arrangement of two doctors, one engineer and four teachers because female doctors cannot empanel with a male engineer.

21. (*c*) C D K L O P cannot be an acceptable arrangement of two doctors, two engineers and two teachers because female teacher cannot empanel with a male doctor.

Solutions (Q. Nos. 22-26) *Following combinations can be formed from the given information*

T, Z ⟶ Delhi ⟶ Swift D'zire
Q, P, W ⟶ Hyderabad ⟶ Honda City
S, R, V ⟶ Chennai ⟶ Ford Ikon

22. (*c*) Members of Ford Ikon car are going to Chennai.

23. (*a*) None of the car has four members.

24. (*d*) S and Z are definitely females but nothing can be determined about the third female.

25. (*c*) Both P and Q are travelling with W.

26. (*b*) Clearly, P, Q and W are travelling in Honda City.

27. (*d*) Option (a) is incorrect as Gabino and Daffy must be in same pen.

Option (b) is incorrect as Blackley and Ashlen cannot be together in pen 2.

Option (c) is incorrect as Gabino and Daffy must be in same pen.

Option (d) is correct as it fulfils all the given conditions

Option (e) is incorrect as Gabino and Daffy must be in same pen.

28. (*b*) According to question and given conditions, the possible arrangements are as below

I. Pen 1 : Earl, Fala, Ashlen
Pen 2 : Gabino, Daffy, Blackley, Custard

II. Pen 1 : Earl, Fala, Blackley
Pen 2 : Gabino, Daffy, Ashlen, Custard

III. Pen 1 : Gabino, Daffy, Blackley
Pen 2 : Earl, Fala, Ashlen, Custard

IV. Pen 1 : Gabino, Daffy, Ashlen
Pen 2 : Earl, Fala, Blackley, Custard

Clearly, in all cases custord is in pen 2.

29. (*e*) Possible arrangements are as follows

Pen 1 : Earl/Fala, Ashlen/Blackley and Custard
Pen 2 : Earl/Fala, Ashlen/Blackley Daffy and Gabino

Clearly, option (e) must not be true.

30. (*d*) If R comes at 4th place, V has to come after R as given in condition III but last programme *i.e.*, 5th programme would be either S or U, hence R cannot be operated at the 4th place.

31. (*e*) Option (a) R, W, P, T, U violates condition III – V should come after R.

Option (b) R, W, Q, S, V violates condition II – T should come after Q.

Option (c) R, W, Q, T, V violates condition IV – last programme should be either S or U.

Option (d) R, W, T, S, U violates condition III – V should come after R.

Option (e) R, W, V, S, U complies with all the conditions.

32. (*e*) Four of the programme sets cannot be operated on the next day out of those operated on the 1st day.

33. (*c*) Option (a), P, R, V, S, U violates condition I - P should not come with V.

Option (b) Q, S, R, V, U violates condition II - T should come after Q.

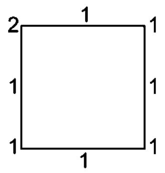
Option (c) T, U, R, V, S is the correct option.

Option (d) U, Q, S, T, W violates condtion IV. Last programme should be either S or U.

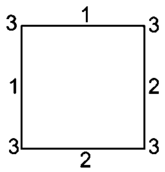
Option (e) V, Q, R, T, S violates condition III V should follow R.

34. (*a*) If R is operated at 3rd place in a sequence, then V will be operated at fourth place and either S or U at last place. On the basis of this sequence, we see that Q cannot be operated at the second place because T cannot be operated after Q as there is no space left for T.

35. (*b*) The number of students who turned up for renting the rooms = 27. Let us see the diagram given below



Ground floor
(Total students = 9)

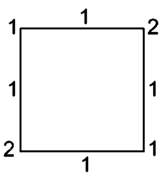


First floor
(Total students = 18)

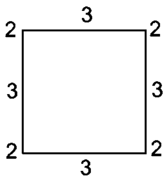
∴ Total students (ground floor + first floor)
= 9 + 18
= 27.

36. (*b*) If the North-West corner room is allotted to 2 students as in the diagram (Q. No. 42), then the number of students in the corresponding room on the first floor and the number of students in the middle room in the first floor of the East wing (as East wing consists of room facing East, it would be at West) would be 3 and 1, respectively.

37. (*b*) If all the 30 students had come, the arrangement, according to the given conditions, would have been as under



Ground floor
(Total students = 10)



First floor
(Total students = 20)

Solutions (Q. Nos. 38-40) *Following table can be drawn from the given information*

Names	**Home Towns**					**Specialist Slot**				
	Sikandrabad	**Panipat**	**Warangal**	**Banaras**	**Chennai**	**Spin**	**Pace bowler**	**Wicket keeper**	**Bats man**	**Cap**
Surinder	✗	✓	✗	✗	✗	✗	✗	✗	✗	✓
Prem	✗	✗	✓	✗	✗	✓	✗	✗	✗	✗
Wasim	✗	✗	✗	✗	✓	✗	✗	✗	✓	✗
Bishamber	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗
Chauhan	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗

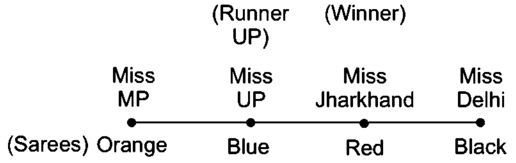
38. (*c*) Chauhan is the wicket-keeper.

39. (*c*) Warangal is spinner's home town.

40. (*b*) Bishamber is the pace bowler.

Solutions (Q. Nos. 41-43) *Following table can be drawn from the given information*

State	**Colour of Sarees**			
	Blue	**Black**	**Orange**	**Red**
Delhi	✗	✓	✗	✗
UP	✓	✗	✗	✗
Jharkhand	✗	✗	✗	✓
MP	✗	✗	✓	✗



41. (*c*) Miss UP was the runner UP.

42. (*b*) Black saree was won by Miss Delhi.

43. (*a*) Miss Jharkhand was wearing Red saree.

Type 3 Puzzles Based on Sequential Order of Events

In this type of questions, some clues are given regarding the occurrence of certain events. The candidate is required to analyze the given information, frame the right sequence and then answer the questions accordingly.

Following examples will give you better idea about the type of questions asked

Directions (Example Nos. 18-22) Read the following information carefully and answer the questions that follow.

[Syndicate Bank (PO) 2010]

Lectures A, B, C, D, E and F are to be organised in a span of seven days from Sunday to Saturday, only one lecture on each day in accordance with the following.

I. A should not be organised on Thursday.
II. C should be organised immediately after F.
III. There should be a gap of two days between E and D.
IV. One day there will be no lecture (Friday is not that day), first before that day D will be organised.
V. B should be organised on Tuesday and should not be followed by D.

***Ex* 18** On which day, there is no lecture?

(a) Monday (b) Friday (c) Sunday (d) Cannot be determined

***Ex* 19** How many lectures are organised between C and D?

(a) None (b) One (c) Two (d) Three

***Ex* 20** Which day will the lecture F be organised?
(a) Thursday (b) Friday (c) Saturday (d) Sunday

***Ex* 21** Which of the following is the last lecture in the series?
(a) A (b) B (c) C (d) None of these

***Ex* 22** Which of the following information is not required in finding the complete sequence of organisation of lectures?
(a) Only I (b) Only II (c) Only V (d) All are required

Solutions (Example Nos. 18-22) B is organised on Tuesday. Now, D is followed by no lecture day. D cannot be organised on Friday, then E will be on Tuesday (D and E have 2 days gap between them). It cannot be organised on Thursday (because, then Friday will be no lecture day). B cannot be followed by D. Therefore, D will be organised on Sunday and E on Wednesday. Monday will be no lecture day, A cannot be organised on Thursday. So, A will be organised on Saturday, F and C will be organised on Thursday and Friday, respectively.

Now, the correct order can be put in the table as below

Sun	Mon	Tue	Wed	Thur	Fri	Sat
D	—	B	E	F	C	A

18. (*a*) No lecture day = Monday

19. (*d*) Three lectures B, E and F are organised between C and D.

20. (*a*) F is organised on Thursday.

21. (*a*) Last lecture = A

22. (*d*) All statements are required

Directions (Example Nos. 23-27) Read the following information carefully to answer the questions that follow.

Five ships J, K, L, M and N are to be unloaded on 5 consecutive days beginning from Monday to Friday.

I. Each ship takes exactly one day to unload.
II. K must be unloaded before (not necessarily immediately before) the days on which M and N are unloaded.
III. L cannot be unloaded on Tuesday.
IV. M is the second ship to be unloaded after J is unloaded.

***Ex* 23** If M is unloaded on Friday, which one of the following is true?
(a) J is unloaded on Wednesday (b) K is unloaded on Tuesday
(c) L is unloaded on Monday (d) L is unloaded on Thursday

***Ex* 24** If K, M and N are to be unloaded one immediately after the other, the two days on which J can be unloaded are
(a) Monday and Tuesday (b) Monday and Friday
(c) Tuesday and Wednesday (d) Wednesday and Friday

***Ex* 25** If L is unloaded immediately after J, which of the following is true?
(a) J is unloaded on Wednesday (b) K is unloaded on Monday
(c) L is unloaded on Thursday (d) M is unloaded on Friday

***Ex* 26** If J is unloaded on Monday, then which of the following must be true?
(a) L is unloaded before K (b) L is unloaded before M
(c) K is unloaded on Tuesday (d) L is unloaded on Thursday

***Ex* 27** N can be unloaded on any day of the week except.
(a) Monday (b) Tuesday (c) Wednesday (d) Thursday

Solutions (Example Nos. 23-27)

23. (*a*) According to the question and given conditions, possibilities of unloading are as follows

Mon	Tue	Wed	Thur	Fri
K/L	N/K	J	L/N	M

As per condition (iv) M is the second ship to be unloaded after J. Hence, if M is unloaded on Friday, then J will automatically be unloaded on the day falling two days before Friday *i.e.*, Friday – 2 = Wednesday.

24. (*a*) According to the question and given conditions, possibilities of un-loading are as follows

***Case* I**

Mon	Tue	Wed	Thur	Fri
L	J	K	M	N

***Case* II**

Mon	Tue	Wed	Thur	Fri
J	K	M	N	L

Clearly in Case I, J is unloaded on Tuesday while in Case II, J is unloaded on Monday.

25. (*b*) According to the question and given condition, possibilities of unloading are as follows

Mon	Tue	Wed	Thur	Fri
K	J	L	M	N

Clearly, K will be unloaded on Monday as K must be unloaded before M and N.

26. (*c*) According to the question and given conditions, possibilities of unloading are as follows

Mon	Tue	Wed	Thur	Fri
J	K	M	L/N	N/L

Clearly, if J is unloaded on Monday, M will be unloaded on Wednesday (condition IV). Since, K has to always come before M, K will be unloaded on Tuesday.

27. (*a*) N cannot be unloaded on Monday as K has to come before N.

Practice Corner **19.3**

Build your Confidence...

Directions (Q. Nos. 1-4) Study the following information and answer the questions given below. **[Bihar Kshetriya (GBO) 2012]**

Six plays K, L, M, N, O and P are to be staged. Each play is to be staged in a different month starting from March to August of the same year.

Play K will be staged in a month that has only thirty days. Two plays will be staged between play L and play K. Three plays will be staged between play P and play O. The month in which play P will be staged does not have thirty one days. Play N will not be staged immediately before or immediately after play P.

1. Which play will be staged in April?
(a) Play K (b) Play L (c) Play O (d) Play P
(e) None of these

2. Three of the following four are alike in a certain way based on the given information and hence form a group. Which of the following does not belong to that group?
(a) Play N (b) Play P (c) Play L (d) Play O
(e) None of these

3. Play M will be staged in which of the following months?
(a) August (b) April
(c) June (d) May
(e) None of these

4. How many plays will be staged before play N?
(a) One (b) Three
(c) Four (d) Two
(e) None of these

Directions (Q. Nos. 5-7) Read the following information carefully to answer the given questions. **[CLAT 2014]**

Five friends Satish, Rajesh, Rehman, Rakesh and Vineet each presents one paper to their class on Physics, Zoology, Botany, English or Geology. One day a week, Monday through Friday.

I. Vineet does not present English and does not given his presentation on Tuesday.
II. Rajesh makes the Geology presentation and does not do it on Monday or Friday.
III. The Physics presentation is made on Thursday.
IV. Rehman makes his presentation, which is not on English, on Wednesday.
V. The Botany presentation is on Friday and not by Rakesh.
VI. Satish makes his presentation on Monday.

5. What day is the English presentation made?
(a) Friday (b) Modnay (c) Tuesday (d) Wednesday

6. What presentation does Vineet do?
(a) English (b) Geology (c) Physics (d) Botany

7. What day does Rakesh make his presentation on?
(a) Monday (b) Tuesday (c) Wednesday (d) Thursday

Directions (Q. Nos. 8-12) Read the following information carefully to answer these questions. **[NIFT (PG) 2014]**

A teacher's training institute has to conduct a refresher course for teachers of seven different subjects.

History, Geography, Political Science, Hindi, Sanskrit, Music and English from 12th December to 19th, December.

I. The course should start with Geography.
II. 13th December being a Sunday, should be a holiday.
III. Music should be on the day previous to English.
IV. The course should end with History.
V. Political Science should be immediately after the holiday. Sanskrit follows Political Science.
VI. There should be a gap of one day between Sanskrit and English and between Music and Hindi.

8. Which subject is followed by Music?
(a) English (b) Geography
(c) Political Science (d) Sanskrit

9. How many days gap is there between Music and Political Science?
(a) One (b) Two (c) Three (d) Four

10. Which subject precedes History?
(a) Sanskrit (b) English
(c) Political Science (d) Hindi

11. Which subject will be on Tuesday?
(a) History (b) English
(c) Sanskrit (d) None of these

12. Which refresher course will start three days before English subject?
(a) Geography
(b) History
(c) Political Science
(d) Sanskrit

Directions (Q. Nos. 13-17) Read the information given in the following paragraph and then answer the questions based on that.

There are six soccer teams A, B, C, D, E and F in the soccer league game. All the six teams play each Saturday during the season. Each team must play against each of the other teams once and only once during the seasons.

I. Team A plays against team D 1st and team F 2nd.
II. Team B plays against team E 1st and team C 3rd.
III. Team C plays against team F 1st.

13. On 1st Saturday, which of the following pairs of teams play against each other?
(a) A and B, C and F, D and E
(b) A and B, C and E, D and F
(c) A and C, B and E, D and F
(d) None of the above

14. Which of the following team must B play second with?
(a) A (b) C
(c) D (d) Either A or D

15. What is the total number of games that each team must play during the season?
(a) 2 (b) 5 (c) 3 (d) 4

16. If D wins 5 games, which of the following must be true?
(a) A loses 5 games (b) A wins 4 games
(c) A wins its first game (d) B loses atleast 1 game

17. The last set of games could be between
(a) A and B, C and F, D and E (b) A and C, B and F, D and E
(c) A and D, B and C, E and F (d) None of these

Directions (Q. Nos. 18-24) Read the following information carefully and then answer the questions based on it.

A sales representative plans to visit each of six companies–M, N, P, Q, R and S exactly once during the course of one day. She is setting up her schedule for the day according to the following conditions.

I. She must visit M before N and before R.
II. She must visit N before Q.
III. The 3rd company she visits must be P.

18. Which of the following could be the order in which sales representative visits the six companies?
(a) M, R, N, Q, P, S (b) M, S, P, N, R, Q (c) P, R M, N, Q, S (d) P, S, M, R, Q, N

19. Which of the following must be true of the sales representative's schedule for the day?
(a) She visits M before Q (b) She visits N before R
(c) She visits P before M (d) She visits P before R

20. If the sales representative visits S first, which company must she visit second?
(a) M (b) N (c) P (d) Q

21. Which of the following could be true of the sales representative's schedule?
(a) She visits M 3rd (b) She visits R 6th
(c) She visits P 1st (d) She visits Q 2nd

22. If the sales representative visits Q immediately before R and immediately after S, she must visit Q
(a) 1st (b) 2nd (c) 4th (d) 5th

23. If the sales representative visits S 6th, which of the following could be her 1st and 2nd visits, respectively?
(a) M and Q (b) M and R
(c) N and M (d) Q and P

24. The sales representative could visit any of the following companies immediately after P except?
(a) M (b) N
(c) Q (d) R

Response & Interpretations **(19.3)**

Solutions (Q. Nos. 1-4) *Following table can be drawn from the given information*

March 31 days	April 30 days	May 31 days	June 30 days	July 31 days	August 31 days
L	P	M	K	N	O

1. (*d*) Play P will be staged in April.
2. (*b*) Except play P, all others will be staged in month having 31 days.
3. (*d*) Play M will be staged in May.
4. (*c*) Four plays L, P, M and K will be staged before play N.

Solutions (Q. Nos. 5-7) *Following table can be drawn from the given information*

Name	Paper					Days				
	Physics	Zoology	Botany	English	Geology	Monday	Tuesday	Wednesday	Thursday	Friday
Satish	✗	✗	✗	✓	✗	✓	✗	✗	✗	✗
Rajesh	✗	✗	✗	✗	✓	✗	✓	✗	✗	✗
Rehman	✗	✓	✗	✗	✗	✗	✗	✓	✗	✗
Rakesh	✓	✗	✗	✗	✗	✗	✗	✗	✓	✗
Vineet	✗	✗	✓	✗	✗	✗	✗	✗	✗	✓

5. (*b*) English presentation made on Monday.
6. (*d*) Botany
7. (*d*) Rakesh make his presentation on Thursday.

Solutions (Q. Nos. 8-12) *As per the statements*

Course starts with Geography, *i.e.*, on 12th December and 13th December will be Sunday.

The course should end with History, *i.e.*, on 19th December. Political Science is after holiday, *i.e.*, on 14th December and Sanskrit on 15th December.

December	12th	13th	14th	15th	16th	17th	18th	19th
	Geography	Sunday	Political Science	Sanskrit	Music	English	Hindi	History

8. (*a*) From the above table, it is seen that English is followed by 'Music'.

9. (*a*) From the above table, it is clear that there is a one day gap between Music and Political Science.

10. (*d*) From the above table, it is clear that Hindi precedes History.

11. (*c*) As Sunday is on 13th December, therefore Tuesday will be on 15th December.
Hence, Sanskrit subject will be on Tuesday.

12. (*c*) As per the above table, Political Science will start three days before the English subject.

13. (*d*) From condition (i), A plays 1st game with D. Team B will play 1st game with E and team C will play its 1st game with team F. None of the options is the right combination of 1st game.

14. (*d*) Team B cannot play 2nd game with E and C as per condition (ii) and also its possibility with F is ruled out according to condition (i). However, its combination with either of the teams A or D can be formed for 2nd game.

15. (*b*) Since, each team must play against all other teams, therefore, each has to play 5 games.

16. (*d*) If D wins 5 games, it means all the teams have lost atleast 1 game each. The only alternative definitely stating this is (d).

17. (*d*) Since, no information in the condition is given about the order of play for the last set of games.

18. (*b*) According to the given conditions (schedule of visit), P must be in third place and the order M, N and Q must not be violated. Hence, the only valid order = M, S, P, N, R, Q.

19. (*a*) It is very much obvious that she visits M before N and N before Q. So, she must visit M before Q.

20. (*a*) Of the six companies, if S is first, P is third and the order MNQ and MR are followed, then M must be visited second.

21. (*b*) From the given information, all other options are definitely false.

22. (*d*) If Q is visited just before R and immediately after S, the order followed will be M, N, S, Q, R. Since, P must be in third place, so we have M, N, P, S, Q, R *i.e.,* Q will be visited 5th.

23. (*b*) Option (b) is the only combination of first and second visit, which confirms to the schedule given in the question.

24. (*a*) As M has to be before N and R and N has to be before Q, so the sales representative could visit any of the following companies immediately after P except M.

Type 4 Complex Family Puzzles

We have already solved family puzzles in the chapter of 'Blood Relation'. But they were simple puzzles in comparison to these questions. But here the problems have taken more complex form as apart from relationship, the professions, qualities, dresses, preferences and other things of the family members are also taken into consideration. While solving such problems, the relationship symbols and family diagram (see chapter 'Blood Relation') will be very useful.

Following examples will give you a better idea about the questions asked

Directions (Example Nos. 28-31) Read the following information given below and then answer the questions that follow. **[MAT 2008]**

There is a family of six persons P, Q, R, S, T and U. Their professions are engineer, doctor, teacher, salesman, manager and lawyer.

I. There are two married couples in the family.
II. The manager is the grandfather of U, who is an engineer.
III. R, the salesman, is married to the lady teacher.
IV. Q is the mother of U and T.
V. Doctor, S is married to the manager.

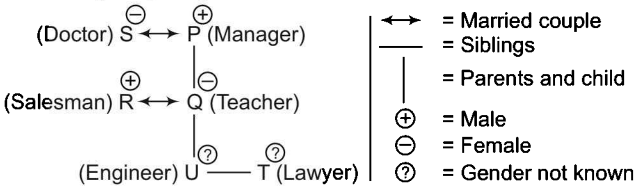
***Ex* 28** How many male members are there in the family?
(a) Two (b) Three (c) Four (d) Data inadequate

***Ex* 29** How P is related to T?
(a) Father (b) Grandfather (c) Mother (d) Grandmother

***Ex* 30** What is the profession of P?
(a) Lawyer (b) Lawyer or Teacher (c) Manager (d) None of these

***Ex* 31** Who are the two married couples in the family?
(a) PQ and SR (b) RU and ST (c) PT and SR (d) PS and RQ

Solutions (Example Nos. 28-31) *Let us draw the family diagram*



28. (*d*) Gender of U and T is unknown. So, total number of male members in the family cannot be determined.

29. (*b*) P is grandfather of T.

30. (*c*) P is a manager.

31. (*d*) PS and RQ are the two married couples in the family.

Practice Corner **19.4**

Build your Confidence...

Directions (Q. Nos. 1-6) Read the given information carefully and then answer the questions that follow.

Six members of a family A, B, C, D, E and F are psychologist, manager, advocate, jeweller, doctor and engineer but not in the same order.

I. Doctor is the grandfather of F who is a psychologist.
II. Manager D is married to A.
III. C, who is a jeweller, is married to advocate.
IV. B is the mother of F and E.
V. There are two married couples in the family.

1. What is the profession of E?
(a) Manager (b) Psychologist
(c) Engineer (d) Doctor

2. How many male members are there in the family?
(a) Two (b) Three
(c) Four (d) Cannot be determined

3. How is A related to E?
(a) Father
(b) Grandmother
(c) Wife
(d) Grandfather

4. What is the profession of A?
(a) Manager (b) Engineer
(c) Advocate (d) Doctor

5. Who are the two couples in the family?
(a) AD and CB (b) AB and CD
(c) AE and DE (d) AC and BD

6. How many maximum male or female members can this family has?
(a) 2 (b) 6
(c) 4 (d) Cannot be determined

Directions (Q. Nos. 7-11) Study the following information carefully and then answer the questions based on.

I. P, Q, R, S, T and U are six members of a three generation family in which there are two married couples.
II. R, a male member, is neither lightest nor the heaviest in the family but he is the grandfather of this family.
III. T is lighter than R and R is lighter than Q. P, the grandmother in the family, is the lightest.
IV. S is the sister of U. Both S and U are heavier than Q.
V. Q is the mother of S and heavier than T.

7. How many female members are there in the family?
(a) Data inadequate (b) Two
(c) Four (d) Three

8. How is T related to U?
(a) Grandfather (b) Sister (c) Mother (d) Father

9. Which of the following is a pair of married couple?
(a) PS (b) QR (c) PQ (d) QT

10. How is R related to S?
(a) Brother (b) Grandfather
(c) Uncle (d) Cousin

11. Who among the following will be at 2nd place, if all the members in the family are arranged in the descending order of their weights?
(a) S (b) P
(c) R (d) Data inadequate

Directions (Q. Nos. 12-14) Read the following information to answer the questions that follow. **[UPSC (CSAT) 2011]**

A, B, C, D and E are five members of a family. There are two fathers, two sons, two wives, three males and two females in the family. Teacher is the wife of a lawyer who is the son of a doctor. E is not a male, neither also a wife of a professional. C is the youngest in the family while D is the eldest in the family. B is a male.

12. How is D related to E?
(a) Husband
(b) Son
(c) Father
(d) Wife

13. Who are the females in this group?
(a) C and E (b) C and D (c) E and A (d) D and E

14. Who's wife is a teacher?
(a) C (b) D (c) A (d) B

Directions (Q. Nos. 15-19) Study the following information carefully to answer the given questions.

I. J, K, L, M, N and O are six family members having different professions.
II. There are two married couples in the family.
III. M is a doctor and his wife is an engineer.
IV. J is the granddaughter of O and sister of L, who is a typist.
V. K is the grandfather of L and is married to a teacher.
VI. J's mother, who is an engineer, is the daughter-in-law of a lawyer.

15. What is the profession of J?
(a) Teacher (b) Lawyer
(c) Engineer (d) Cannot be determined

16. Which of the following is one of the married couples?
(a) KN (b) MO
(c) NM (d) Cannot be determined

17. Who is the wife of M?
(a) N (b) O
(c) J (d) Cannot be determined

18. How many male members are there in the family?
(a) Two
(b) Three
(c) Four
(d) Cannot be determined

19. Which of the following pairs of persons belong to the second generation?
(a) Teacher and Doctor
(b) Lawyer and Typist
(c) Engineer and Doctor
(d) Engineer and Teacher

Directions (Q. Nos. 20-24) Study the following information carefully to answer the questions based on that.

I. There is a family of six persons representing three generations.
II. There are two married couples and both the wives are housewives.
III. Pratap, the lawyer, is father of Prashant and has one grandchild.
IV. Pooja, the doctor, is the sister of the teacher.
V. Madhu's daughter-in-law Sumati is married to a teacher.
VI. Bindu, granddaughter of one of the housewives is studying in 9th standard.

20. What is the profession of Prashant?
(a) Student (b) Teacher
(c) Lawyer (d) Cannot be determined

21. Who among the following is one of the married couples?
(a) Pratap-Bindu (b) Madhu-Pratap
(c) Prashant-Bindu (d) Cannot be determined

22. Who are the children of Madhu?
(a) Pooja and Prashant (b) Sumati and Pooja
(c) Prashant and Sumati (d) Cannot be determined

23. Which of the following statements is not true?
(a) Pratap has one grandchild
(b) Madhu has one son and one daughter
(c) Prashant has one child
(d) Sumati has one son and one daughter

24. How many male members are there in the family?
(a) Two
(b) Three
(c) Four
(d) Cannot be determined

25. In a group of five persons A, B, C, D and E, one person is a professor, one is a doctor and one is lawyer. A and D are unmarried females who don't work. There is a married couple in the group in which E is the husband, B is the brother of A who is neither doctor nor a lawyer. Who is professor?
(a) B
(b) C
(c) A
(d) Data inadequate

Directions (Q. Nos. 26-31) Read the following information carefully and answer the questions based on it.

In a family of six members, there are three men L, M and N and three women R, S and T. The six persons are architect, lawyer, CA, professor, doctor and engineer by profession but not in the same order.

I. There are two married couples and two unmarried persons.
II. N is not R's husband.
III. The doctor is married to a lawyer. R's grandfather is a professor.
IV. M is neither L's son nor he is an architect or a professor.
V. The lawyer is T's daughter-in-law.
VI. N is T's son and the engineer's father.
VII. L is married to the CA.

26. Which among the following is the correct pair of married couples?
(a) AS and NT (b) LR and NM
(c) LT and NS (d) SM and NR

27. Who among the following are two unmarried persons?
(a) L, S (b) L, M (c) L,T (d) R, M

28. Who is an architect?
(a) R (b) M
(c) N (d) L

29. How T is related to M?
(a) Mother (b) Grandmother
(c) Wife (d) Daughter

30. N belongs to .... generation.
(a) 4th (b) 2nd (c) 1st (d) 3rd

31. Which of the following pairs belongs to the 1st generation?
(a) Doctor and Professor (b) Architect and Lawyer
(c) CA and Professor (d) CA and Engineer

Directions (Q. Nos. 32-36) Read the following information carefully to answer the questions that follow. **[Hotel Mgmt 2011]**

I. A, B, C, D, E and F are the members of a family.
II. These members are engineer, doctor, designer, lawyer, manager and professor but not in the same order.
III. There are two married couples in the family.
IV. C is the designer and is married to lawyer.
V. B is either father or mother of F and E.
VI. A is married to manager D.
VII. F is a professor who is the grandson or granddaughter of doctor.
VIII. B is a female while doctor is a male member.

32. Which of the following is one of the pairs of couples in the family?
(a) AD
(b) AC
(c) AB
(d) Cannot be determined

33. What is the profession of A?
(a) Doctor (b) Lawyer
(c) Designer (d) Manager

34. What is the profession of E?
(a) Professor (b) Manager
(c) Designer (d) None of these

35. How many females are there in the family?
(a) 1 (b) 3
(c) 4 (d) Cannot be determined

36. How is A related to E?
(a) Grandfather (b) Father
(c) Uncle (d) Brother

Directions (Q. Nos. 37-41) Read the following information carefully and then answer the questions based on that. **[CLAT 2014]**

I. In a family of six persons, there are people from three generations. Each person has separate profession and also each one likes different colours. There are two couples in the family.
II. Charan is a CA and his wife neither is a doctor nor likes green colour.
III. Engineer likes red colour and his wife is a teacher.
IV. Vanita is mother-in-law of Namita and she likes orange colour.
V. Mohan is grandfather of Raman and Raman, who is a principal, likes black colour.
VI. Sarita is granddaughter of Vanita and she likes blue colour. Sarita's mother likes white colour.

37. Who is an engineer?
(a) Sarita (b) Vanita (c) Namita (d) Mohan

38. What is the profession of Namita?
(a) Doctor (b) Engineer
(c) Teacher (d) Cannot be determined

39. Which of the following is the correct pair of two couples?
(a) Mohan—Vanita and Charan—Sarita
(b) Vanita—Mohan and Charan—Namita
(c) Charan—Namita and Raman—Sarita
(d) Cannot be determined

40. How many ladies are there in the family?
(a) Two (b) Three
(c) Four (d) None of these

41. Which colour is liked by CA?
(a) White
(b) Blue
(c) Black
(d) None of these

Directions (Q. Nos. 42-45) Read the following information carefully to answer the questions that follow. **[NMAT 2006]**

I. P, Q, R, S, T and U are six members of a group, of which three are males and three are females.
II. There are two engineers, two lawyers, one teacher and one doctor in the group.
III. Q, T, P and R are two married couples and no two persons in this group have the same profession.
IV. T, a teacher with blue dress, married a male lawyer with brown dress.
V. Colour of the dresses of both the husbands and that of both the wives is the same.
VI. Two persons have blue dress, two have brown and the remaining one each has black and green.
VII. P is a male engineer whose sister S is also an engineer.
VIII. Q is a doctor.

42. What is the colour of U's dress?
(a) Brown (b) Black or Green
(c) Green (d) Black

43. Who is the wife of P?
(a) T (b) S
(c) R (d) Q

44. Which of the following is a group of female members?
(a) UST (b) QTV
(c) QSU (d) QST

45. Which of the following is a pair of married ladies?
(a) QT (b) TS
(c) PR (d) Data inadequate

Directions (Q. Nos. 46-48) Read the following information carefully to answer the questions that follow. **[MAT 2013]**

There is a family of six members A, B, C, D, E and F. They are lawyer, doctor, teacher, salesman, engineer and accountant not necessarily in that order. There are two married couples in the family. D, the salesman, is married to the lady teacher. The doctor is married to the lawyer. F, the accountant, is the son of B and brother of E. C, the lawyer, is the daughter-in-law of A. E is the unmarried engineer. A is the grandmother of F.

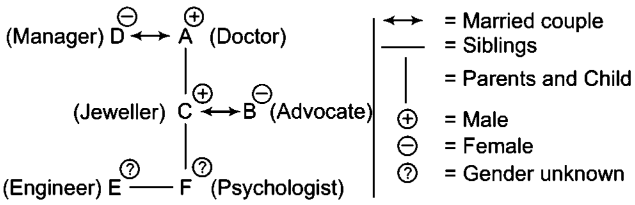
46. How is E related to F?
(a) Brother (b) Sister
(c) Cousin (d) None of these

47. What is the profession of B?
(a) Teacher (b) Doctor
(c) Lawyer (d) Cannot be determined

48. Which of the following is one of the couples?
(a) F and D
(b) D and B
(c) E and A
(d) None of the above

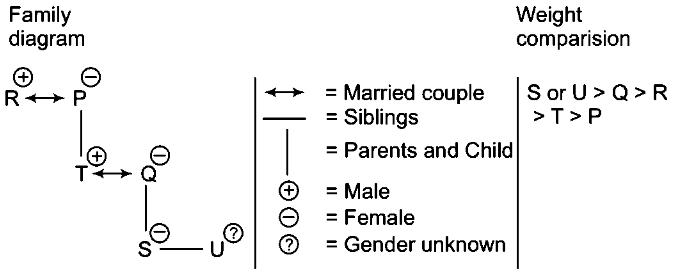
Response & Interpretations **(19.4)**

Solutions (Q. Nos. 1-6) *Let us draw the family diagram*


(Manager) D ⊖ ↔ A ⊕ (Doctor)
(Jeweller) C ⊕ ↔ B ⊖ (Advocate)
(Engineer) E ? — F ? (Psychologist)
↔ = Married couple
— = Siblings
| = Parents and Child
⊕ = Male
⊖ = Female
? = Gender unknown

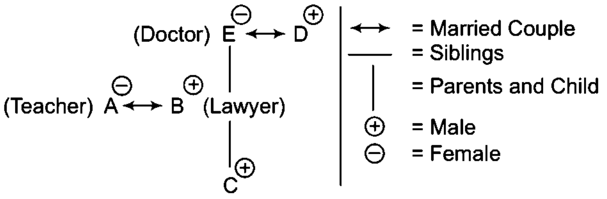
1. (c) E is an Engineer.
2. (d) Gender of E and F are unknown. So, total number of male members cannot be determined.
3. (d) A is the grandfather of E.
4. (d) A is a doctor.
5. (a) AD and CB are the two couples in the family.
6. (c) If E and F both are males, then the total male members are four (A, C, E and F).
   If E and F both are females, then the total female members are also four (B, D, E and F).
   Hence, this family has maximum four males or four females.

Solutions (Q. Nos. 7-11) *Let us draw the family diagram*


Family diagram
Weight comparison
R ⊕ ↔ P ⊖
T ⊕ ↔ Q ⊖
S ⊖ — U ?
↔ = Married couple
— = Siblings
| = Parents and Child
⊕ = Male
⊖ = Female
? = Gender unknown
S or U > Q > R > T > P

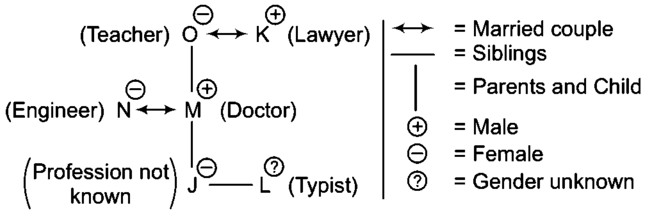
7. (a) As gender of U is not known, so the data is inadequate.
8. (d) T is the father of U.
9. (d) As QT and PR are two married couples in the family, QT is one of them.
10. (b) R is the grandfather of S.
11. (d) As S or U can be at 2nd place but no definite information is available about it.

Solutions (Q. Nos. 12-14) *Let us draw the family diagram*


(Doctor) E ⊖ ↔ D ⊕
(Teacher) A ⊖ ↔ B ⊕ (Lawyer)
C ⊕
↔ = Married Couple
— = Siblings
| = Parents and Child
⊕ = Male
⊖ = Female

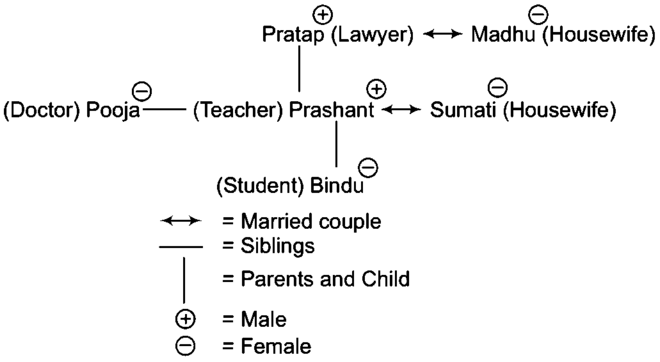
12. (a) D is the husband of E.
13. (c) A and E are the females.
14. (d) B's wife is a teacher.

Solutions (Q. Nos. 15-19) *Let us draw the family diagram*


(Teacher) O ⊖ ↔ K ⊕ (Lawyer)
(Engineer) N ⊖ ↔ M ⊕ (Doctor)
(Profession not known) J ⊖ — L ? (Typist)
↔ = Married couple
— = Siblings
| = Parents and Child
⊕ = Male
⊖ = Female
? = Gender unknown

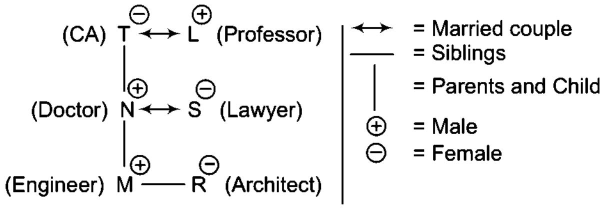
15. (d) J's profession cannot be determined.
16. (c) NM and OK are the two married couples in the family. NM is one out of them.
17. (a) N is M's wife.
18. (d) Cannot be determined as gender of L is not known.
19. (c) Engineer and Doctor belong to the second generation.

Solutions (Q. Nos. 20-24) *Let us draw the family diagram*


Pratap ⊕ (Lawyer) ↔ Madhu ⊖ (Housewife)
(Doctor) Pooja ⊖ — (Teacher) Prashant ⊕ ↔ Sumati ⊖ (Housewife)
(Student) Bindu ⊖
↔ = Married couple
— = Siblings
| = Parents and Child
⊕ = Male
⊖ = Female

20. (b) Prashant is a teacher.
21. (b) Pratap-Madhu and Prashant-Sumati are the two married couples in the family. Pratap-Madhu is one of them.
22. (a) Pooja and Prashant are the children of Madhu.
23. (d) Option (d) is not correct as Sumati has only one child Bindu.
24. (a) Pratap and Prashant are the two male members in the family.
25. (a) According to the question,
    A and D are workless.
    B is neither doctor nor lawyer.
    Hence, it is clear that B must be professor.

Solutions (Q. Nos. 26-31) *Let us draw the family diagram*


(CA) T ⊖ ↔ L ⊕ (Professor)
(Doctor) N ⊕ ↔ S ⊖ (Lawyer)
(Engineer) M ⊕ — R ⊖ (Architect)
↔ = Married couple
— = Siblings
| = Parents and Child
⊕ = Male
⊖ = Female

26. (*c*) LT and NS are the married couples in the family.

27. (*d*) M and R are two unmarried persons.

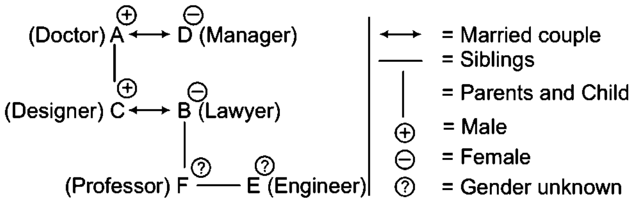
28. (*a*) R is an architect.

29. (*b*) T is the grandmother of M.

30. (*b*) N belongs to second generation.

31. (*c*) CA and Professor are in the first generation.

Solutions (Q. Nos. 32-36) *Let us draw the family diagram*



(Doctor) A ⊕
D ⊖ (Manager)
(Designer) C ⊕
B ⊖ (Lawyer)
(Professor) F ?
E ? (Engineer)
⟷ = Married couple
—— = Siblings
│ = Parents and Child
⊕ = Male
⊖ = Female
? = Gender unknown

32. (*a*) AD and BC are the two couples and AD is one of them which is given in the options.

33. (*a*) A is a doctor.

34. (*d*) E is an engineer.

35. (*d*) Gender of F and E is not known. So, total number of females in the family cannot be determined.

36. (*a*) A is the grandfather of E.

Solutions (Q. Nos. 37-41) *According to given conditions, we can make the below table*

Grandparents	Mohan (Engg) (Red)	Vanita (Teacher) (Orange)
Parents	Charan (CA)	Namita (White)
Children	Raman (Principal) (Black)	Sarita (Blue)

37. (*d*) Mohan is an Engineer.

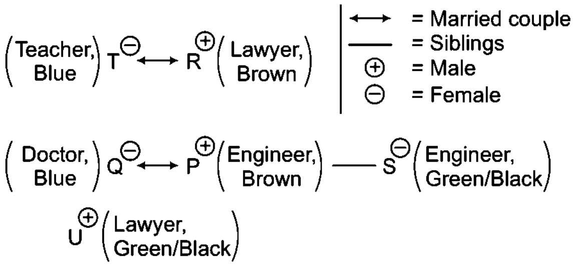
38. (*d*) Namita's profession is not given.

39. (*b*) Pair of two couples are Vanita—Mohan and Charan—Namita.

40. (*b*) There are three ladies in the family.

41. (*d*) Charan is a CA and colour liked by him is not given.

Solutions (Q. Nos. 42-45) *Let us draw the family diagram*



(Teacher, Blue) T ⊖
R ⊕ (Lawyer, Brown)
(Doctor, Blue) Q ⊖
P ⊕ (Engineer, Brown)
S ⊖ (Engineer, Green/Black)
U ⊕ (Lawyer, Green/Black)
⟷ = Married couple
—— = Siblings
⊕ = Male
⊖ = Female

T is a female teacher with blue dress.

T married a lawyer. P is an engineer and Q is a doctor. Hence, it is clear that T and R are married couple. R is a male lawyer with brown dress. One couple is RT. So, the other couple is PQ.

P is a male engineer and has the same dress as R *i.e.,* brown.

Q is a female doctor and has the same dress as T *i.e.,* blue.

S is ths sister of P. S is a female engineer. Now, U remains. As there are two lawyers, so U is a lawyer. Both S and U have either black or green dress.

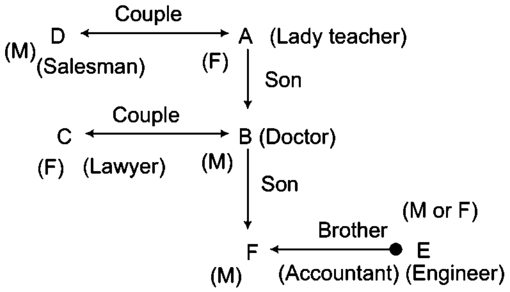
42. (*b*) U's dress is either black or green.

43. (*d*) Q is the wife of P.

44. (*d*) Q, S and T are the three females in the group.

45. (*a*) Q and T are the married ladies in the group.

Solutions (Q. Nos. 46-48) *Let us draw the family diagram*



Couple
D
A (Lady teacher)
(M) (Salesman)
(F)
Son
Couple
C
B (Doctor)
(F) (Lawyer)
(M)
Son
(M or F)
Brother
F
E
(M)
(Accountant) (Engineer)

46. (*d*) As it is not clear that E is male or female, so we cannot conclude that E is brother or sister of F.

47. (*b*) B is a Doctor.

48. (*d*) D, A and C, B are married couples.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-2) Read the following information carefully to answer the questions that follow. **[IBPS (Clerk) 2011]**

A, B, C, D, E and F stay at the different floor of a building. Ground floor is number 1, First floor is number 2 and so on. A stays at even number floor. There are two floors between the floor on which D and F stay. F stays on the floor above D. D does not live on number 2 floor. B does not live on odd number floor. C does not live on any floor under F. E stays neither immediately above B nor immediately under B.

1. Who live exactly in between D and F?

(a) E, B (b) C, B
(c) E, C (d) A, E
(e) B, A

2. On which floor does B stay?

(a) 6th (b) 4th
(c) 2nd (d) 5th
(e) Cannot be determined

Directions (Q. Nos. 3-5) Read the following information given below to answer the questions that follow. **[FMS 2011]**

P, Q, R, S, T and X are six persons who decided to start a partnership business in computer hardware. Q, R and T are ladies and the rest are men. P, Q, R and X are well versed in hardware but the other do not know much about the hardware. Q, X and S know marketing but others do not know anything about marketing.

3. The male partner who knows marketing but does not know computer hardware.

(a) S (b) P (c) X (d) Q

4. The female partner who is well versed in computer hardware but does not know marketing is

(a) X (b) Q (c) T (d) R

5. The female partner who neither knows hardware nor marketing is

(a) R
(b) Q
(c) T
(d) X

6. Four political parties W, X, Y and Z decided to set up a joint candidate for the coming parliamentary elections. The formula agreed by them was the acceptance of a candidate by most of the parties. Four aspiring candidate A,B,C and D approached the parties for their tickets. **[UPSC (CSAT) 2012]**

A was acceptable to W but not to Z.

B was acceptable to Y but not to X.

C was acceptable to W and Y.

D was acceptable to W and X.

When candidate B was preferred by W and Z, candidate C was preferred by X and Z and candidate A was acceptable to X but net to Y, who got the ticket?

(a) A (b) B (c) C (d) D

Directions (Q. Nos. 7-11) Study the following information carefully to answer the given questions. **[FMS 2011]**

Five experts on nano technology involved in an 'international research project' hold a quarterly review meeting in Singapore. There are certain limitations on their language skills. Expert R1 knows only Japanese and Hindi; R2 is good at Japanese and English; R3 is good at English and Hindi, R4 knows French and Japanese quite well and R5 an Indian known Hindi, English and French.

7. Besides R5 which of the following can converse with R4 without an interpreter?

(a) Only R1
(b) Only R2
(c) Only R3
(d) Both R1 and R2

8. Which of the following cannot converse without an interpreter?

(a) R2 and R5
(b) R1 and R2
(c) R1 and R3
(d) R3 and R4

9. Choose the language that is least commonly used at the meeting.

(a) English
(b) French
(c) Japanese
(d) None of these

10. Which of the following can act as an interpreter when R3 and R4 wish to discuss?

(a) Only R1
(b) Only R2
(c) Only R5
(d) None of these

11. Suppose a sixth expert R6 joins into the session, so that maximum number of the earlier five is able to understand him, he should be fluent in

(a) English and French
(b) Japanese and Hindi
(c) English and Hindi
(d) None of the above

12. The music director of a film wants to select four persons to work on "different aspects of the composition of a piece of music. Seven persons are available for this work; they are Rohit, Tanya, Shobha, Kaushal, Kunal, Mukesh and Jaswant. Rohit and Tanya will not work together. Kunal and Shobha will not work together. Mukesh and Kunal want to work together.

Which of the following is the most acceptable group of people that can be selected by the music director?

[UPSC (CSAT) 2013]

(a) Rohit, Shobha, Kunal and Kaushal
(b) Tanya, Kaushal, Shobha and Rohit
(c) Tanya, Mukesh, Kunal and Jaswant
(d) Shobha, Tanya, Rohit and Mukesh

Directions (Q. Nos. 13-17) Study the following information carefully to answer the given questions.

[Andhra Bank (PO) 2010]

I. In a family of six persons, there are two couples.
II. The lawyer is the head of the family and has only two sons Mukesh and Rakesh both teachers.
III. Mrs Reena and her mother-in-law both are lawyers.
IV. Mukesh's wife is a doctor and they have a son, Ajay.

13. Which of the following is definitely a couple?

(a) Lawyer-Teacher
(b) Doctor-Lawyer
(c) Teacher-Teacher
(d) Cannot be determined
(e) None of these

14. What is the profession of Rakesh's wife?

(a) Teacher
(b) Doctor
(c) Lawyer
(d) Cannot be determined
(e) None of these

15. How many male members are there in the family?

(a) Two
(b) Three
(c) Four
(d) Cannot be determined
(e) None of these

16. What is/was Ajay's grandfather's occupation?

(a) Teacher
(b) Lawyer
(c) Doctor
(d) Cannot be determined
(e) None of the above

17. What is the profession of Ajay?

(a) Teacher
(b) Lawyer
(c) Doctor
(d) Cannot be determined
(e) None of the above

Directions (Q. Nos. 18-20) Read the following information carefully to answer these questions. **[MAT 2013]**

Three friends Surinder, Varinder and Joginder wore shirts of black, blue and orange colours (not necessarily in that order) and pants of green, yellow and orange colours (not necessarily in that order). No person wore pant and shirt of the same colour. Further, it is given that

- Surinder did not wear shirt of black colour.
- Joginder did not wear shirt of orange colour.
- Varinder wore pant of orange colour.
- Varinder did not wear shirt of blue colour.
- Surinder did not wear pant of green colour.

18. What were the colours of pant and shirt wore by Joginder, respectively?

(a) Orange and black
(b) Yellow and black
(c) Green and blue
(d) Yellow and blue

19. What was the colour of the shirt wore by Varinder?

(a) Blue
(b) Orange
(c) Black
(d) Green

20. What was the colour of the pant wore by Surinder?

(a) Orange
(b) Green
(c) Yellow
(d) blue

Directions (Q. Nos. 21-25) Read the following information and choose the right alternative in the questions that follow. **[IIFT 2010]**

During the cultural week of an institute six competitions were conducted. The cultural week was inaugurated in the morning of 19th October, Wednesday and continued till 26th October. In the span of 8 days six competitions namely debate, folk dance, fash-p, street play, rock band and group song, were organised along with various other cultural programmes. The information available from the institute is

I. Only one competition was held in a day.
II. Rock band competition was not conducted on the closing day.
III. Fash-p was conducted on the day prior to debate competition.
IV. Group song competition was conducted neither on Wednesday nor on Saturday.
V. None of the competition was conducted on Thursday and Sunday.
VI. Street play competition was held on Monday.
VII. There was gap of two days between debate competition and group song competition.

21. The cultural week started with which competition?
(a) Fash-p competition (b) Debate competition
(c) Street play competition (d) Rock band competition

22. How many days gap is there between Rock band competition and group song competition?
(a) Two (b) Three (c) Four (d) Five

23. Which pair of competition was conducted on Wednesday?
(a) Rock band competition and debate competition
(b) Debate competition and fash-p competition
(c) Rock band competition and folk dance competition
(d) None of the above

24. Which competition exactly precedes the street play competition?
(a) Rock band competition
(b) Group song competition
(c) Debate competition
(d) Fash-p competition

25. Fash-p competition follows which competition?
(a) Debate competition
(b) Street play competition
(c) Rock band competition
(d) None of the above

Directions (Q. Nos. 26-30) Examine the information given in the following paragraph and answer the items that follow. **[UPSC (CSAT) 2012]**

Guest lectures on five subjects *viz*. Economics, History, Statistics, English and Mathematics have to be arranged in a week from Monday to Friday. Only one lecture can be arranged on each day. Economics cannot be scheduled on Tuesday. Guest faculty for History is available only on Tuesday. Mathematics lecture has to be scheduled immediately after the day of Economics lecture. English lecture has to be scheduled immediately before the day of Economics lecture.

26. Which lecture is scheduled on Monday?
(a) History (b) Economics
(c) Mathematics (d) Statistics

27. Which lecture is scheduled between Statistics and English?
(a) Economics (b) History
(c) Mathematics (d) No lecture

28. Which lecture is the last one in the week?
(a) History (b) English
(c) Mathematics (d) Economics

29. Which lecture is scheduled on Wednesday?
(a) Statistics
(b) Economics
(c) English
(d) History

30. Which lecture is scheduled before the Mathematics lecture?
(a) Economics
(b) History
(c) Statistics
(d) English

31. Seven men, A, B, C, D, E, F and G are standing in a queue in that order. Each one is wearing a cap of a different colour like violet, indigo, blue, green, yellow, orange and red. D is able to see in front of him green and blue, but not violet. E can see violet and yellow, but not red. G can see caps of all colours other than orange. If E is wearing an indigo coloured cap, then the colour of the cap worn by F is **[UPSC (CSAT) 2013]**
(a) Blue (b) Violet (c) Red (d) Orange

Directions (Q. Nos. 32-36) Study the following information carefully to answer the given questions.

[Canara Bank (PO) 2010]

I. Six plays are to be organised from Monday to Sunday, one play each day with one day when there is no play. 'no play' day is not Monday or Sunday.
II. The plays are held in sets of 3 plays each in such a way that 3 plays are held without any break, *i.e.*, 3 plays are held in such a way that there is no 'no play' day between them but immediately before this set or immediately after this set it is 'no play' day.
III. Play Z was held on 26th and play X was held on 31st of the same month.
IV. Play B was not held immediately after play A (but was held after A, not necessarily immediately) and play M was held immediately before Q.
V. All the six plays were held in the same month.

32. Which play was organised on Monday?
(a) Z (b) M
(c) Q (d) Cannot be determined
(e) None of these

33. Which day was play Z organised?
(a) Tuesday (b) Monday
(c) Wednesday (d) Cannot be determined
(e) None of these

34. Which date was a 'no play' day?
(a) 26th (b) 28th
(c) 29th (d) Cannot be determined
(e) None of these

35. Which of the following is true?
(a) Play B is held immediately before play M
(b) Play Z is held after play B
(c) There was a gap after 2 plays and then 4 plays were organised
(d) First play was organised on the 25th
(e) Play B was held on Friday

36. Which day was play Q organised?
(a) Friday
(b) Wednesday
(c) Saturday
(d) Cannot be determined
(e) None of the above

Directions (Q. Nos. 37-41) Read the following information given below to answer the questions.

[IBPS (Clerk) 2013]

A, B, C, D, E, F and G are standing in a straight line facing North with equal distances between them, not necessarily in the same order.

Each one is pursuing a different profession—actor, reporter, doctor, engineer, lawyer, teacher and painter not necessarily in the same order.

G is fifth to the left of C. The reporter is third to the right of G. F is fifth to the right of A, E is second to the left of B. The engineer is second to the left of D. There are only three people between the engineer and the painter. The doctor is to the immediate left of the engineer. The lawyer is to the immediate right of the teacher.

37. What is A's profession?
(a) Painter (b) Doctor (c) Teacher (d) Actor
(e) Engineer

38. Which of the following statements is true according to the given arrangement?
(a) F is the teacher
(b) F is third to the left of E
(c) The painter is to the immediate left of B
(d) The lawyer is standing in the exact middle of the arrangement
(e) None of the given statements is true

39. Who among the following is the actor?
(a) E (b) F (c) C (d) B
(e) A

40. What is D's position with respect to the painter?
(a) Third to the left (b) Second to the right
(c) Fourth to the right (d) Third to the right
(e) Second to the left

41. Four of the following five are alike in a certain way based on the given standing arrangement and so form a group. Which of the following does not belong to the group?
(a) AED
(b) DFC
(c) GDB
(d) EBF
(e) BFC

42. In five flats, one above the other, live five professionals. The professor has to go up to meet his IAS officer friend. The doctor is equally friendly to all and has to go up as frequently as go down. The engineer has to go up to meet his MLA friend above whose flat lives the professor's friend.
From the ground floor to the top floor, in what order do the five professionals live? **[UPSC (CSAT) 2012]**
(a) Engineer, Professor, Doctor, IAS officer, MLA
(b) Professor, Engineer, Doctor, IAS officer, MLA
(c) IAS officer, Engineer, Doctor, Professor, MLA
(d) Professor, Engineer, Doctor, MLA, IAS officer

Directions (Q. Nos. 43-46) Read the following statements and answer the four items that follow **[UPSC (CSAT) 2013]**

Five cities P, Q, R, S and T are connected by different modes of transport as follows.

- P and Q are connected by boat as well as rail.
- Q and T are connected by air only.
- T and R are connected by rail and bus.
- S and R are connected by bus and boat.
- P and R are connected by boat only.

43. Which mode of transport would help one to reach R starting from Q but without changing the mode of transport?

(a) Boat (b) Rail
(c) Bus (d) Air

44. If a person visits each of the places starting from P and gets back to P, which of the following places must he visit twice?

(a) Q (b) R
(c) S (d) T

45. Which of the following pairs of cities is connected by any of the routes directly without going to any other city?

(a) P and T (b) T and S
(c) Q and R (d) None of these

46. Between which two cities among the pairs of cities given below are there maximum travel options available?

(a) Q and S (b) P and R
(c) P and T (d) Q and R

47. Read the passage given below and the two statements that follow (given on the basis of the passage).

Four men are waiting at Delhi airport for a Mumbai flight. Two are doctors and the other two are businessmen. Two speak Gujarati and two speak Tamil. No two of the same profession speak the same language. Two are Muslims and two are Christian. No two of the same religion are of the same profession, nor do they speak the same language. The Tamil-speaking doctor is a Christian.

I. The Christian-businessman speaks Gujarati.
II. The Gujarati"speaking doctor is a Muslim.

Which of the above statements is/are correct conclusion/conclusions? **[UPSC (CSAT) 2012]**

(a) Only I (b) Only II (c) Both I and II (d) Neither I nor II

Directions (Q. Nos. 48-50) Read the following information carefully to answer these questions. **[MAT 2013]**

Five friends A, B, C, D and E travelled to five different cities of India from Mumbai. They went to Chennai, Kolkata, Delhi. Bengaluru and Hyderabad by different modes of transport, *i.e.*, by bus, train, aeroplane, car and boat. Mumbai is not connected by bus to Delhi and Chennai. The person who travelled to Delhi did not make use of the boat. 'C' went to Bengaluru by car and 'B' went to Kolkata by aeroplane, 'D' travelled by boat while 'E' travelled by train.

48. Which of the following combinations of person and mode is not correct?

(a) D - Boat
(b) B - Aeroplane
(c) E - Aeroplane
(d) C - Car

49. Which of the following combinations is true for 'D'?

(a) Delhi-Bus (b) Chennai-Bus
(c) Chennai-Boat (d) Chennai-Car

50. Who among the following travelled to Delhi?

(a) C (b) D (c) E (d) A

Directions (Q. Nos. 51-55) Read the information given below and answer the questions that follow. **[IIFT 2010]**

I. Six friends Rahul, Kabeer, Anup, Raghu, Amit and Alok were engineering graduates. All six of them were placed in six different companies and were posted in six different locations namely Tisco-Jamshedpur, Telco-Pune, Wipro- Bengaluru, HCL-Noida, Mecon-Ranchi and Usha Martin- Kolkata. Each of them has their personal e-mail id's with different e-mail providers *i.e.*, gmail, Indiatimes, Rediffmail, Yahoo, Hotmail, Sancharnet though not necessarily in the same order.
II. The one having e-mail account with Sancharnet works in Noida and the one having an e-mail account with Indiatimes works for Tisco.
III. Amit does not stay in Bengaluru and does not work for Mecon, the one who works for Mecon has an e-mail id with gmail.
IV. Rahul has an e-mail id with Rediffmail and works at Pune.
V Alok does not work for Mecon and the one who works for Wipro does not have an e-mail account with Yahoo.
VI. Kabeer is posted in Kolkata and does not have an account with Hotmail.
VII. Neither Alok nor Raghu work in Noida.
VIII. The one who is posted in Ranchi has an e-mail id which is not an account of Rediffmail or Hotmail.
IX. Anup is posted in Jamshedpur.

51. The man who works in Wipro has an e-mail account with?

(a) Sancharnet (b) Yahoo
(c) Rediffmail (d) None of these

52. Which of the following e-mail, place of posting and person combination is correct?

(a) Kabeer-Kolkata-Rediffmail
(b) Alok-Bengaluru-Indiatimes
(c) Amit-Noida-Yahoo
(d) Raghu-Ranchi-Gmail

53. Which of the following is true?

(a) Amit is posted at Ranchi
(b) Raghu is posted at Jamshedpur
(c) Kabeer has an e-mail id with Yahoo
(d) Rahul has an e-mail id with Indiatimes

54. Which of the following sequences of location represent Alok, Kabeer, Anup, Rahul, Raghu and Amit in the same order?

(a) Bengaluru, Noida, Pune, Jamshedpur, Ranchi, Kolkata
(b) Bengaluru, Kolkata, Jamshedpur, Pune, Noida, Ranchi
(c) Kolkata, Bengaluru, Jamshedpur, Pune, Noida, Ranchi
(d) None of the above

55. People who have e-mail account with Indiatimes, Sancharnet and Yahoo work for which companies, in the same sequence as the e-mail accounts mentioned?

(a) Usha Martin, HCL, Wipro
(b) Tisco, Wipro, Usha Martin
(c) HCL, Tisco, Wipro
(d) Tisco, HCL, Usha Martin

Directions (Q. Nos. 56-58) Read the following information carefully to answer these questions.

[NIFT (UG) 2014]

Five friends namely Kiran, Geeta, Honey, Ramesh and Jagan have very good characteristics and are being considered for various awards. Geeta, Kiran and Honey are sincere. Kiran, Ramesh and Jagan are very brave. Ramesh, Honey and Jagan are very truthful. Kiran, Geeta and Jagan are courteous.

56. Which of the following persons is neither brave nor courteous?

(a) Honey (b) Geeta (c) Kiran (d) Ramesh

57. Which of the following persons is neither truthful nor brave but is courteous?

(a) Honey (b) Ramesh (c) Kiran (d) Geeta

58. Which combination of friends is not 'brave' but 'sincere'?

(a) Geeta and Kiran
(b) Jagan and Honey
(c) Honey and Ramesh
(d) Geeta and Honey

Directions (Q. Nos. 59-60) Read the following information carefully and answer the questions which follow.

[IBPS (PO) 2011]

A, B, C, D, E and F live on different floors in the same building having six floors numbered one to six (the ground floor is numbered one, the floor above it is numbered two and so on and the topmost floor is numbered 6).

A lives on an even-numbered floor. There are two floors between the floors on which D and F live. F lives on a floor above D's floor. D does not live on the floor numbered two. B does not live on an odd-numbered floor. C does not live on any of the floors below F's floor. E does not live on a floor immediately above or immediately below the floor on which B lives.

59. Who among the following live on the floors exactly between D and F?

(a) E, B (b) C, B (c) E, C (d) A, E
(e) B, A

60. On which of the following floors does B live?

(a) Sixth (b) Fourth
(c) Second (d) Fifth
(e) Cannot be determined

Directions (Q. Nos. 61-65) Study the information given below carefully and then answer the questions that follow.

Eight people A, B, C, D, E, F, G and H work in three different companies X, Y and Z. Out of these, two are females who work in different companies and have different specialisations. Two of them are specialists in Finance, two in HR, two in marketing and one each is an engineer and a computer specialist.

D, working in a company X has specialised in HR and her friend G, a finance specialist is working in company Z. H, an HR specialist, is working with B, a marketing specialist and does not work in company Y. C is not a computer specialist. No two people with the same specialisation work together. F is a specialist in marketing working in company Y and his friend, A has specialist in finance and is working in company X with only another specialist. Not more than three of them work in any company. No female is an engineer or computer specialist.

61. In which two companies do the HR specialist work?
(a) X and Y (b) Y and Z
(c) X and Z (d) Data inadequate

62. Who is the computer specialist?
(a) C (b) E
(c) H (d) Data inadequate

63. Which of the following represents the two females?
(a) DB (b) DH
(c) DG (d) Either (a), (b) or (c)

64. Which of the following is the speciality of H?
(a) Marketing
(b) Finance
(c) HR
(d) Engineer

65. In which company does C work?
(a) Y
(b) Z
(c) X
(d) Y or Z

Directions (Q. Nos. 66-68) Read the following information carefully to answer these questions. **[MAT 2013]**

There are six employees sitting in a competitive examination, namely K, L, M, N, O and P, K and L are from Dehradun while M, N, O and P are from Mangalore. N and P are tall while rest are short. L, O and P are males while rest of them are females.

66. Who is the tall female from Mangalore?
(a) M
(b) P
(c) O
(d) N

67. Who is the short female from Dehradun?
(a) M (b) L (c) K (d) N

68. Who is the tall male from Mangalore?
(a) O (b) P (c) M (d) N

Directions (Q. Nos. 69-71) Read the following information carefully to answer these questions.

There are six books/volumes kept in a steel rack/shelf and are labelled as L, M, N, O, P and Q. M, P, N and Q have blue covers while others have red covers. L, M and O are new volumes while the rest are old volumes, L, M and N are law books while the rest are engineering books.

69. Which two volumes are old engineering books having blue covers?
(a) P and N
(b) P and O
(c) P and Q
(d) Q and L

70. Which new volume engineering book has a red cover?
(a) L (b) O (c) Q (d) P

71. Which new volume law book has a blue cover?
(a) P (b) N
(c) L (d) M

Directions (Q. Nos. 72-76) Study the following information carefully to answer the given questions. **[MHA-CET 2011]**

Twelve cars *viz.* Mercedes, Swift, Santro, Accord, Innova, Polo, Punto, Figo, Civic, City, Ferrari and Landrover are parked in two parallel rows containing six cars each, in such a way that there is an equal distance between adjacent cars. The cars parked in row 1 are parked in such a manner the driver seated in the cars would face the South. In row 2, cars are parked in such a manner that the drivers seated in these cars would face the North. Therefore, in the given parking arrangement each car parked in a row faces another car of the other row.

I. Mercedes being a big car must be parked at one of the extreme ends. Mercedes is parked second to the left of Santro. Santro faces Figo.
II. Punto and Innova are parked immediately next to each other. Neither is parked next to Figo or Santro.
III. Civic is parked in such a manner that its driver when seated in the parked car would face South. Civic is parked third to the left of Polo.
IV. City is parked in such a manner that it faces Ferrari. Ferrari is parked second to the left of Landrover. Landrover faces North and is not parked next to Figo.
V. Swift is parked third to the right of Ferrari and faces Innova.

➘ Left and right parking directions are with reference to the driver as, if the driver is seated in the car.

72. How many cars are parked between Santro and Civic?
(a) One
(b) Two
(c) Three
(d) Both cars are parked in different rows

73. Polo is related to Ferrari in the same way as Innova is related to Accord. To which of the following city related to, following the same pattern?
(a) Mercedes (b) Innova
(c) Santro (d) Punto

74. Which of the following cars are parked at extreme ends of the rows?

(a) Landrover, Punto (b) Innova, Punto
(c) Polo, Accord (d) Landrover, Innova

75. Which of the following car faces Polo?

(a) Mercedes (b) Civic (c) Landrover (d) Punto

76. Which of the following is true regarding Figo?

(a) A driver seated in the parked Figo would face North
(b) Swift is parked second to the right of the car facing Figo
(c) Punto and Ferrari are parked immediately next to Figo
(d) Mercedes and Accord are parked at the extreme ends of the row in which Figo is parked

Directions (Q. Nos. 77-78) Three of the following four are alike in a certain way based upon the given parking arrangement and so form a group. Which is the one that does not belong to that group?

77. (a) Ferrari (b) Civic
(c) Swift (d) Mercedes

78. (a) Polo-Figo (b) Accord-Landrover
(c) Figo-Innova (d) Mercedes-City

Directions (Q. Nos. 79-83) Study the following information and answer the following questions. **[SBI (PO) 2013]**

A, B, C, D, E, G and I are seven friends who study in three different standards namely 5th, 6th and 7th such that not less than two friends study in the same standard. Each friend also has a different favourite subject namely History, Civics, English, Marathi, Hindi, Maths and Economics but not necessarily in the same order.

A likes Maths and studies in the 5th standard with only one other friend who likes Marathi. I studies with two other friends. Both the friends who study with I like languages (here, languages include only Hindi, Marathi and English).

D studies in the 6th standard with only one person and does not like Civics. E studies with only one friend. The one who likes history does not study in 5th or 6th standard. E does not like languages. C does not like English, Hindi or Civics.

79. Which combination represents E's favourite subject and the standard in which he studies?

(a) Civics and 7th (b) Economics and 5th
(c) Civics and 6th (d) History and 7th
(e) Economics and 7th

80. Which of the following is I's favourite subject?

(a) History (b) Civics
(c) Marathi (d) Either English or Marathi
(e) Either English or Hindi

81. Who amongst the following studies in the 7th standard?

(a) G (b) C (c) E (d) E
(e) Either D or B

82. Which of the following combinations is definitely correct?

(a) I and Hindi
(b) G and English
(c) C and Marathi
(d) B and Hindi
(e) E and Economics

83. Which of the following subjects does G like?

(a) Either Maths or Marathi
(b) Either Hindi or English
(c) Either Hindi or Civics
(d) Either Hindi or Marathi
(e) Either Civics or Economics

84. Abdul, Mala and Chetan went for bird watching. Each of them saw one bird that none of the others did. Each pair saw one bird that the third did not. One bird was seen by all three. Of the birds Abdul saw, two were yellow. Of the birds Mala saw, three were yellow. Of the birds Chetan saw, four were yellow. How many yellow birds were seen in all ? How many non-yellow birds were seen in all?

(a) 7 yellow birds and 3 non-yellow birds (b) 5 yellow birds and 2 non-yellow birds
(c) 4 yellow birds and 2 non-yellow birds (d) 3 yellow birds and 2 non-yellow birds

Directions (Q. Nos. 85-86) Consider the following statements and answer Q. Nos. 85 and 86 on the basis of these statements. **[UP PSC 2014]**

I. A guest house has six rooms A. B, C, D, E and F. Among these A and C can accommodate two persons each, the rest can accommodate only one each.

II. Eight guests P, Q, R, S, T, U. W and X are to be kept in these rooms. Q, T and X are females while the others are males. The two sexes cannot be put together in the same room. So man is willing to stay in room C or F.

III. P wants to be alone but does not want to stay in room B or D. S needs a partner but is not ready to stay with U or W. X does not want to share her room.

85. Who among the following will stay in room E ?
(a) U (b) W (c) P (d) Q

86. 'X' will stay in which of the room ?
(a) C (b) E (c) B (d) F

Directions (Q. Nos. 87-90) In a game,'words' (meaningful or meaningless) consist of any combination of atleast five letters of the English alphabets. A 'sentence' consists of exactly six words and satisfies the following conditions. **[XAT 2008]**

The six words are written from left to right on a single line in alphabetical order. The sentence can start with any word and successive word is formed by applying exactly one of three operations to the preceding word: delete one letter, add a letter, replace one letter with another. At the most three of the six words can begin with the same letter. Except for the first word, each word is formed by a different operation used for the preceding word.

87. Which one of the following could be a sentence in the word game?
(a) bzaeak blaeak laeak paeak paea paean
(b) doteam goleam golean olean omean omman
(c) crobek croeek roeek soeek sxoeek xoeek
(d) feted freted reted seted seteg aseteg
(e) forod forol forols forpls orpls morpls

88. If 'clean' is the first word in a sentence and 'learn' is another word in the sentence, then which one of the following is a complete and accurate list of the positions 'learn' could occupy?
(a) Third (b) Second, third, fourth
(c) Third, fourth (d) Third, fourth, fifth
(e) Third, fourth, fifth, sixth

89. If the first word in a sentence consists of five letters, then the maximum number of letters that the fifth word in the sentence could contain is
(a) seven (b) four
(c) eight (d) five
(e) six

90. The last letter of the English alphabet that the first word of a sentence in the word game can begin with is
(a) t
(b) w
(c) x
(d) y
(e) z

Directions (Q. Nos. 91-95) Read the following information carefully and answer the following questions. **[NMAT 2008]**

Seven members of a family V, W, X, Y, T, R and Z are travelling to seven destinations Chennai, Delhi, Hyderabad, Bengaluru, Jaipur, Pune and Bhopal not necessarily in the same order. Each one of them has a different profession doctor, engineer, consultant, banker, professor, businessman and sportsman not necessarily in the same order.

W is banker and he travels to Delhi. Z is a sportsman and he does not travel to Jaipur or Chennai. T is not a doctor or professor and travels to Hyderabad. Consultant does not travel to Hyderabad or Bengaluru. Businessman travels to Pune. R travels to Bengaluru. X, the doctor travels to Chennai. Y is not a businessman.

91. Who travels to Pune?
(a) V (b) Y (c) R (d) Z

92. Who is the professor?
(a) V (b) R (c) X (d) Y

93. Which of the following combinations of profession, person and place is correct?
(a) Consultant-Y-Jaipur (b) Consultant-X-Jaipur
(c) Businessman-W-Pune (d) Businessman-Y-Pune

94. Who travels to Bhopal?
(a) X
(b) Y
(c) V
(d) Z

95. What is T's profession?
(a) Businessman
(b) Engineer
(c) Consultant
(d) Cannot be determined

Directions (Q. Nos. 96-100) Study the following information carefully to answer these questions. **[IRMA 2009]**

Ten persons A, B, C, D, E, F, G, H, I and J go for a trip, planning to travel in three cars X,Y and Z. Atleast three persons travel in each car. Out of the ten persons, three are couples and the men and women are equal in number. Both the members of each couple travel in the same car.

A, who travels in car Y is son of C who travels in car X with E who is father of J who is sister of I. C who is a married woman is sister of G, the husband of F who travels in car Z. I, who is the daughter of H travels in car Z, A and D travel in the same car.

96. Four persons travel in which car?
(a) X (b) Y (c) Z (d) X or Y

97. Which of the following groups represents all the male members?

(a) HDE (b) GFD (c) EFC (d) ABD

98. Which of the following group of persons travel in the same car?

(a) ADG (b) ABJ (c) GHI (d) GFI

99. Who is husband of 'C'?

(a) A (b) D
(c) B (d) Cannot be determined

100. J travels in which car?

(a) X (b) Y (c) Z (d) X or Z

Directions (Q. Nos. 101-105) Read the following information carefully and answer the following questions. **[JMET 2009]**

Six friends Abhishek, Deepak, Mridul, Pritam, Ranjan and Salil married within a year in the months of February, April, July, September, November and December and in the cities of Ahmedabad, Bengaluru, Chennai, Delhi, Mumbai and Kolkata but not necessarily following the above order. The bride's names were Geetika, Jasmine, Hema, Brinda, Ipsita and Venna, once again not following any order. The following are some facts about their weddings.

I. Mridul's wedding took place in Chennai, however he was not married to Geetika or Veena.
II. Abhishek's wedding took place in Ahmedabad and Ranjan's in Delhi, however neither of them was married to Jasmine or Brinda.
III. The wedding in Kolkata took place in February.
IV. Hema's wedding took place in April but not in Ahmedabad.
V. Geetika and Ipsita got married in February and November and in Chennai and Kolkata but not following the above order.
VI. Pritam visited Bengaluru and Kolkata only after his marriage in December.
VII. Salil was married to Jasmine in September.

101. Hema's husband is

(a) Abhishek (b) Deepak
(c) Ranjan (d) Pritam

102. Deepak's wedding took place in

(a) Bengaluru (b) Mumbai
(c) Kolkata (d) Delhi

103. In Mumbai, the wedding of one of the friends took place in the month of

(a) April (b) September
(c) November (d) December

104. Salil's wedding was held in

(a) Bengaluru
(b) Chennai
(c) Kolkata
(d) Delhi

105. Ipsita's wedding took place in

(a) Ahmedabad
(b) Bengaluru
(c) Mumbai
(d) Chennai

Directions (Q. Nos. 106-113) Study the following information carefully and answer the given questions. **[IBPS (PO) 2011]**

Eight persons from different banks *viz.* UCO Bank, Syndicate Bank, Canara Bank, PNB, Dena Bank, Oriental Bank of Commerce, Indian Bank and Bank of Maharashtra are sitting in two parallel rows containing four people each, in such a way that there is an equal distance between adjacent persons.

In row 1, A, B, C and D are seated and all of them are facing South. In row 2, P, Q, R and S are seated and all of them are facing North. Therefore, in the given sitting arrangement each member seated in row faces another member of the other row. (All the information given above does not necessarily represent the order of seating as in the final arrangement.)

I. C sits second to right of the person from Bank of Maharashtra. R is an immediate neighbour of the person who faces the person from Bank of Maharashtra.
II. Only one person sits between R and the person from PNB. The immediate neighbour of the person from PNB faces the person from Canara Bank.
III. The person from UCO Bank faces the person from Oriental Bank of Commerce. R is not from Oriental Bank of Commerce. P is not from PNB. P does not face the person from Bank of Maharashtra.
IV. Q faces the person from Dena Bank. The one who faces S sits to the immediate left of A.
V. B does not sit at any of the extreme ends of the line. The person from Bank of Maharashtra does not face the person from Syndicate Bank.

106. Which of the following is true regarding A?

(a) The person from UCO Bank faces A
(b) The person from Bank of Maharashtra is an immediate neighbour of A
(c) A faces the person who sits second to the right of R
(d) A is from Oriental Bank of Commerce
(e) A sits at one of the extreme ends of the line

107. Who is seated between R and the person from PNB?

(a) The person from Oriental Bank of Commerce
(b) P
(c) Q
(d) The person from Syndicate Bank
(e) S

108. Who amongst the following sit at extreme ends of the rows?

(a) D and the person from PNB
(b) The persons from Indian Bank and UCO Bank
(c) The persons from Dena Bank and P
(d) The persons from Syndicate Bank and D
(e) C, Q

109. Who amongst the following faces the person from Bank of Maharashtra?

(a) The person from Indian Bank
(b) P
(c) R
(d) The person from Syndicate Bank
(e) The person from Canara Bank

110. P is related to Dena Bank in the same way as B is related to PNB based on the given arrangement. Who amongst the following is D related to, following the same pattern?

(a) Syndicate Bank
(b) Canara Bank
(c) Bank of Maharashtra
(d) Indian Bank
(e) Oriental Bank of Commerce

111. Four of the following five are alike in a certain way based on the given sitting arrangement and thus form a group. Which is the one that does not belong to that group?

(a) Canara Bank
(b) R
(c) Syndicate Bank
(d) Q
(e) Oriental Bank of Commerce

112. Who amongst the following is from Syndicate Bank?

(a) C
(b) R
(c) P
(d) D
(e) A

113. C is from which of the following banks?

(a) Dena Bank
(b) Oriental Bank of Commerce
(c) UCO Bank
(d) Syndicate Bank
(e) Canara Bank

Directions (Q. Nos. 114-115) Read the following information carefully and answer the questions that follow. **[MAT 2014]**

Five men A, B, C, D and E read a newspaper. The one who reads first give it to C. The one who reads last had taken it from A. E was not the first or the last to read. There are two readers between B and A.

114. B passed the newspaper to whom?

(a) A
(b) C
(c) D
(d) E

115. Who reads the newspaper last?

(a) A
(b) B
(c) C
(d) D

Directions (Q. Nos. 116-119) Answer the following questions based on the information given below. **[CAT 2008]**

In a sports event, six team A, B, C, D, E and F are competing against each other. Matches are scheduled in two stages. Each team plays three matches in stage I and two matches in stage II. No team plays against the same team more than once in the event. No ties are permitted in any of the matches. The observations after the competition of stage I and stage II are as given below.

Stage I

I. One team won all the three matches.
II. Two teams lost all the matches.
III. D lost to A but won against C and F.
IV. E lost to B but won against C and F.
V. B lost atleast one match.
VI. F did not play against the top team of stage I.

Stage II

I. The leader of stage I lost the next two matches.
II. One of the two teams at the bottom after stage I, won both the matches while the other lost both the matches.
III. One more team lost both the matches in stage II.

116. The two team that defeated the leader of stage I are

(a) F and D
(b) E and F
(c) B and D
(d) E and D

Master Exercise

117. The only team(s) that won both matches in stage II is (are)
(a) B
(b) E and F
(c) A, E and F
(d) B, E and F

118. The teams that won exactly two matches in the event are
(a) A, D and F
(b) D and E
(c) E and F
(d) D and F

119. The team(s) with the most wins in the event is(are)
(a) A
(b) A and C
(c) F
(d) B and E

Directions (Q. Nos. 120-121) Read the following information carefully and answer the questions that follow.

[XAT 2011]

On certain day six passengers from Chennai, Bengaluru, Kochi, Mumbai and Hyderabad boarded the New Delhi bound Rajdhani Express from Tata Nagar. The following facts are known about these six passengers.

I. The persons from Kochi and Chennai are less than 36 yr of age.
II. Person Z, the youngest among all is a doctor.
III. The oldest person is from Kolkata and his/her profession is same as that of the person who got down at Mughal Sarai.
IV. The persons from Bengaluru, Chennai, Hyderabad and Mumbai got down at four different stations. The eldest among these four got down at Koderma and the youngest at Kanpur. The person who got down at New Delhi is older than the person who got down at Mughal Sarai.
V. The engineer from Bengaluru is older than the engineer from Chennai.
VI. While arranging the teachers in increasing order of age, it was observed that the middle person is as old as the engineer from Chennai.
VII. Person Y who got down at Mughal Sarai is less than 34 yr old.
VIII. The teacher from Kochi is 4 yr older than the 31 yr old doctor who is not from Mumbai.

120. Which of the following options is true?
(a) The person from Chennai is older than the person from Kochi
(b) The oldest teacher is from Mumbai
(c) The person from Mumbai is older than atleast one of the engineers
(d) The person from Kochi got down at Mughal Sarai and was an engineer
(e) The person who got down at New Delhi is older than Y, who in turn is older than the person from Hyderabad

121. If W is neither the youngest nor the oldest among the travellers from her profession, which of the following is true about her?
(a) She got down at Koderma
(b) She is 36 yr old
(c) She got down at Mughal Sarai
(d) She is from Kochi
(e) None of the above

Response & Interpretations (Master Exercise)

Solutions (Q. Nos. 1-2) *Then given information can be arranged as follows*

Floor	6	5	4	3	2	1
Person	B	C	F	E	A	D

1. (*d*) A and E live exactly between D and F.
2. (*a*) B stays on 6th floor.

Solutions (Q. Nos. 3-5) *The given information can be presented in the table as follows*

P	Male	Hardware	—
Q	Female	Hardware	Marketing
R	Female	Hardware	—
S	Male	—	Marketing
T	Female	—	—
X	Male	Hardware	Marketing

3. (*a*) S is the male who knows marketing but not hardware.
4. (*d*) R is the female who knows computer hardware but not marketing.

5. (*c*) T is the female who neither knows hardware nor marketing.
6. (*c*) Following table can be drawn from the given information

	W	**X**	**Y**	**Z**
A	✓	✓	✗	✗
B	✓	✗	✓	✓
C	✓	✓	✓	✓
D	✓	✓	✗	✗

According to the given conditions, A is accepted by W and X. B is accepted by Y, W and Z. C was accepted by W, Y, X and Z. D was accepted by W and X.

So, C is accepted by all the four parties. So, option (c) is correct.

7. (*d*) The given information is as under
R1 = Japanese and Hindi, R2 = Japanese and English
R3 = English and Hindi, R4 = French and Japanese and R5 = Hindi, English and French.
Hence, besides R5, R1 and R2 can converse with R4 without an interpreter in Japanese.

8. (*d*) Refer to solution 7, in option (a), R2 and R5 have English in common. In option (b), R1 and R2 have Japanese in common. In option (c), R1 and R3 have Hindi in common. In option (d), R3 and R4 do not have any language in common.

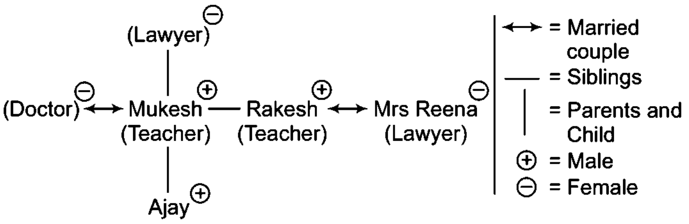
9. (*b*) Refer to solution 7. Three experts know each of Japanese, English and Hindi. Only two experts know French. So, French is least commonly used in the meeting.

10. (*d*) Refer to solution 7. R3 knows English and Hindi, while R4 knows French and Japanese. Anyone who knows one language between English and Hindi and one language between French and Japanese can act as an interpreter for R3 and R4. Anyone among R1, R2 and R5 can do this. But answer options say only R1, only R2 and only R5.

11. (*b*) Refer to solution 7. If R6 is fluent in Japanese and Hindi, he will be able to communicate with each of R1, R2, R3, R4 and R5.

12. (*c*) Rohit and Tanya cannot work together which means that options (b) and (d) are out. Kunal and Shobha will not work together and so option (a) is out. Hence, the right answer is (c) where no one has a problem working with another person of the group and Mukesh and Kunal are also working together.

Solutions (Q. Nos. 13-17) *Let us draw the family diagram*



13. (*a*) Lawyer-Teacher is a definite couple.

14. (*c*) Rakesh's wife is a lawyer.

15. (*b*) Rakesh, Mukesh and Ajay are the three male members in the family.

16. (*d*) The family does not have grandfather of Ajay. So, it cannot be determined.

17. (*d*) Ajay's occupation is not given.

Solutions (Q. Nos. 18-20) *Following table can be drawn from the given information*

	Shirts			Pants		
	Black	Blue	Orange	Green	Yellow	Orange
Surinder	✗	✗	✓	✗	✓	✗
Varinder	✓	✗	✗	✗	✗	✓
Joginder	✗	✓	✗	✓	✗	✗

18. (*c*) Joginder wore pant and shirt of green and blue colour, respectively.

19. (*c*) Varinder wore shirt of black colour.

20. (*c*) Surinder wore pant of yellow colour.

Solutions (Q. Nos. 21-25)

From V, no competition was held on 20th and 23rd.

From VI, street play was held on 24th.

From III and VII, debate must have been held on 22nd

Fash-p on 21st and group song on 25th.

From II, rock band was held on 19th.

Now, following table can be drawn from the given information

19	20	21	22	23	24	25	26
Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed
Rock band	✗	Fash-p	Debate	✗	Street play	Group song	Folk Dance

21. (*d*) The cultural week started with 'rock band' competition.

22. (*d*) Gap of 5 days is there between rock band competition and group song competition.

23. (*c*) Rock band and folk dance was conducted on Wednesday.

24. (*c*) Debate precedes street play.

25. (*c*) Fash-p follows rock band.

Solutions (Q. Nos. 26-30) *Information given in the passage can be arranged in the tabular form like this*

Days	Monday	Tuesday	Wednesday	Thursday	Friday
Subject	Statistics	History	English	Economics	Maths

26. (*d*) Statistics lecture is scheduled on Monday.

27. (*b*) From the table above, History is scheduled between Statistics and English.

28. (*c*) Mathematics lecture is scheduled on the last day of the week.

29. (*c*) English is scheduled on Wednesday.

30. (*a*) Economics is scheduled before the Mathematics lecture.

31. (*c*) Order of standing of seven men is given and it is given that G can see all caps except orange. It means that G is wearing orange cap. Now, it is also given that D can see green and blue in front of him but not violet. Also, it is given that E can see violet and yellow. Both these statements combined together tell us that D is wearing violet cap as E can see violet but D cannot. So, D must be wearing violet cap. Now, it is also given that E is wearing indigo coloured cap and from above statements it is clear that A, B and C must be wearing any of the cap from among green, blue and yellow. So, it is clear that F must be wearing red.

Arrangement in queue is as follows

A ⟶ Green
B ⟶ Blue
C ⟶ Yellow
D ⟶ Violet
E ⟶ Indigo
F ⟶ Red
G ⟶ Orange

Solutions (Q. Nos. 32- 36) *The given information can be represented in the table as given below*

Date	Day	Play
25	Monday	A
26	Tuesday	Z
27	Wednesday	B
28	Thursday	No play
29	Friday	M
30	Saturday	Q
31	Sunday	X

32. (*e*) A was organised on Monday.

33. (*a*) Z was organised on Tuesday.

34. (*b*) 28th was no play day.

35. (*d*) On 25th first play A was organised.

36. (*c*) Play Q was organised on Saturday.

Solutions (Q. Nos. 37-41) *From the given information standing arrangement and profession of the persons are as follows*

A	G	E	D	B	F	C
Doctor	Engineer	Teacher	Lawyer	Reporter	Painter	Actor

↑ North

37. (*b*) A is a doctor.

38. (*d*) Clearly, the lawyer is standing in the exact middle of the arrangement.

39. (*c*) C is an actor.

40. (*e*) D is second to the left of painter.

41. (*e*) BFC does not belong to the group.

Solution (Q. No. 42) *Information given in the paragraph can be arranged in the tabular form like this*

42. (*d*)

Floors	Ground	1st	2nd	3rd	4th
Professionals	Professor	Engineer	Doctor	MLA	IAS

So, from the above table, option (d) is correct.

Solutions (Q. Nos. 43-46)

43. (*a*) Q is not directly connected to R and so we have to go through P or T. First, lets take up the route through T. From Q to T, we can take air only. From T to R, we can take rail and bus. Hence, there is no single mode which will get us to R through T. Now, we take up the route through P. From Q to P, we can go by boat or rail. From P to R, we can go by boat only. Thus, the common mode between Q and P and P and R is boat.

44. (*b*) S is connected to R only. So, we will have to visit R twice once while going to S and once while coming back from S.

45. (*d*) The question statement itself mentions all the 5 routes direct connections between the cities. None of these direct connections is mentioned among the options and so (d) is the right answer.

46. (*a*) Q and S have maximum travel options available.

47. (*c*) Following table can be drawn from the given information

Persons	Gujarati	Tamil	Muslim	Christian
Doctor	✓	✗	✓	✗
Doctor	✗	✓	✗	✓
Businessman	✓	✗	✗	✓
Businessman	✗	✓	✓	✗

From the above table, it is clear that both the statements are correct. Hence, option (c) is correct.

Solutions (Q. Nos. 48-50) *Following table can be drawn from the given information*

	Destinations					Made of Transport				
	Chennai	Kolkata	Delhi	Bengaluru	Hyderabad	Bus	Train	Aeroplane	Car	Boat
A	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗
B	✗	✓	✗	✗	✗	✗	✗	✓	✗	✗
C	✗	✗	✗	✓	✗	✗	✗	✗	✓	✗
D	✓	✗	✗	✗	✗	✗	✗	✗	✗	✓
E	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗

48. (*c*) From the above table, it is clear that E- Aeroplane is not a correct combination.

49. (*c*) From the above table, it is clear that D went to Chennai by boat.

50. (*c*) From the above table, it is clear that E travelled to Delhi.

Solutions (Q. Nos. 51-55) *Following table can be drawn from the given information*

Name	E-mail provider	Company	City
Rahul	Rediffmail	Telco	Pune
Kabeer	Yahoo	Usha martin	Kolkata
Anup	Indiatimes	Tisco	Jamshedpur
Raghu	gmail	Mecon	Ranchi
Amit	Sancharnet	HCL	Noida
Alok	hotmail	Wipro	Bengaluru

51. (*d*) Alok works in Wipro and has id with hotmail.

52. (*d*) Raghu-Ranchi-Gmail is the correct combination.

53. (*c*) Kabeer has an id with Yahoo.

54. (*d*) Correct sequence = Bengaluru, Kolkata, Jamshedpur, Pune, Ranchi, Noida.

55. (*d*) The required sequence = Tisco, HCL, Usha Martin.

Solutions (Q. Nos. 56-58) *According to the question, the table is as below*

Sincere	Brave	Truthful	Courteous
Geeta	Kiran	Ramesh	Kiran
Kiran	Ramesh	Honey	Geeta
Honey	Jagan	Jagan	Jagan

56. (*a*) Honey is neither brave nor courteous.

57. (*d*) Geeta is neither truthful nor brave but courteous.

58. (*d*) Geeta and honey are not brave but sincere.

Solutions (Q. Nos. 59-60) *Following table can be drawn from the given information*

Floors	6th	5th	4th	3rd	2nd	1st
Individual	B	C	F	E	A	D

59. (*d*) From the above table, A and E live between D and F.

60. (*a*) From the above table, B lives on sixth floor.

Solutions (Q. Nos. 61-65) *The given information can be represented as in the table given below*

Person	Company	Gender	Occupation
A	X	Male	Finance
B	Z	Male/Female	Marketing
C	Y	Male	Engineer
D	X	Female	HR
E	Y	Male	Computer
F	Y	Male	Marketing
G	Z	Male/Female	Finance
H	Z	Male/Female	HR

61. (*c*) HR specialist works in companies X and Z.

62. (*b*) E is the computer specialist.

63. (*d*) D and B/G/H

64. (*c*) H is the HR specialist.

65. (*a*) C works in company Y.

Solutions (Q. Nos. 66-68) *Following table can be drawn from the given information*

Characteristics/Employees	Dehradun	Mangalore	Tall	Short	Male	Female
K	✓	✗	✗	✓	✗	✓
L	✓	✗	✗	✓	✓	✗
M	✗	✓	✗	✓	✗	✓
N	✗	✓	✓	✗	✗	✓
O	✗	✓	✗	✓	✓	✗
P	✗	✓	✓	✗	✓	✗

66. (*d*) From the above table, tall female from Mangalore is N.

67. (*c*) Short female from Dehradun is K.

68. (*b*) Tall male from Mangalore is P.

Solutions (Q. Nos. 69-71) *Following table can be drawn from the given information*

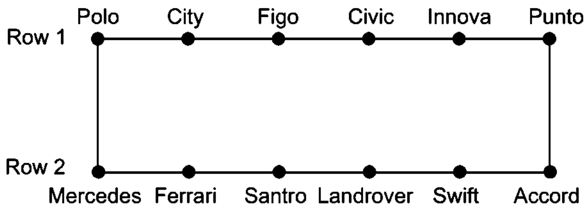
Characteristics/Books	Blue cover	Red cover	New volume	Old volume	Law books	Engineering books
L	✗	✓	✓	✗	✓	✗
M	✓	✗	✓	✗	✓	✗
N	✓	✗	✗	✓	✓	✗
O	✗	✓	✓	✗	✗	✓
P	✓	✗	✗	✓	✗	✓
Q	✓	✗	✗	✓	✗	✓

69. (*c*) From the above table, books of old volume of engineering having blue cover are P and Q.

70. (*b*) Book of new volume of engineering having red cover is O.

71. (*d*) Books of new volume of law having blue cover is M.

Solutions (Q. Nos. 72-78) *Following arrangement of cars is obtained from the given information*



72. (*d*) Both cars (*i.e.,* Santro and Civic) are in different rows.

73. (*c*) City is related to Santro following the same manner.

74. (*c*) Polo and Accord are parked at extreme ends of the row.

75. (*a*) Mercedes faces Polo.

76. (*b*) Swift is parked second to the right of the car Santro which is facing Figo.

77. (*b*) Civic does not belong to the group. (all other are in the same row)

78. (*d*) Mercedes-city does not belong to the group. (all other have one car between them)

Solutions (Q. Nos. 79-83) *Following table can be drawn from the given information*

Friends	Standard	Subject
A	V	Maths
B	VII	Hindi/English
C	V	Marathi
D	VI	Economics
E	VI	Civics
G	VII	Hindi/English
I	VII	History

79. (*c*) E's favourite subject is Civics and he studies in 6th standard.

80. (*a*) I's favourite subject is History.

81. (*a*) G studies in 7th standard.

82. (*c*) C and Marathi is definitely a correct combination.

83. (*b*) G likes either Hindi or English.

Solution (Q. No. 84)

84. (*b*) Abdul + Mala + Chetan → 1 yellow
Abdul + Chetan → 1 yellow
Chetan → 1 yellow
Mala + Chetan → 1 yellow
Mala → 1 yellow
Abdul + Mala → Non-yellow
Abdul → Non-yellow

Hence, total yellow birds = 5
and total non-yellow birds = 2

Solutions (Q. Nos. 85-86) *Following table can be drawn from the given information*

Room	Persons								
	Number of Persons	**P(–)**	**Q(+)**	**R(–)**	**S(–)**	**T(+)**	**U(–)**	**W(–)**	**X(+)**
A	2	✗	✗	✓	✓	✗	✗	✗	✗
B	1	✗	✗	✗	✗	✗	—	—	✗
C	2	✗	✓	✗	✗	✓	✗	✗	✗
D	1	✗	✗	✗	✗	✗	—	—	✗
E	1	✓	✗	✗	✗	✗	✗	✗	✗
F	1	✗	✗	✗	✗	✗	✗	✗	✓

Here, (+) denotes females and (–) denotes males.

85. (*c*) From the above table, it is clear that P will stay in room E.

86. (*d*) It is clear from the above table that X will stay in room F.

Solutions (Q. Nos. 87-90)

87. (*c*) Only option (c) satisfies all the given conditions, *i.e.*, all the words in the sentence are in successive order and the operations are replacing, deleting, replacing, adding and deleting, respectively.

88. (*e*) Word 'Learn' can occupy any position except second.

89. (*a*) Maximum seven letters can be present in fifth word as addition can only take place in alternate steps.

90. (*d*) First word of the sentence can begin with 'y' as last letter of English alphabet because maximum three words can begin with the same letter.

Solutions (Q. Nos. 91-95) *Following table can be drawn from the given information*

Member	Professions	Cities
V	Businessman	Pune
W	Banker	Delhi
X	Doctor	Chennai
Y	Consultant	Jaipur
T	Engineer	Hyderabad
R	Prof	Bengaluru
Z	Sports	Bhopal

91. (*a*) V travels to Pune.

92. (*b*) R is the professor.

93. (*a*) Correct combination = Consultant - Y - Jaipur

94. (*d*) Z travels to Bhopal.

95. (*b*) T is an engineer.

Solutions (Q. Nos. 96-100) *Following results can be obtained from the given information*

$\text{Car X} = \overset{\oplus}{B} \leftrightarrow \overset{\ominus}{C}, \ \overset{\oplus}{E} \leftrightarrow \overset{\ominus}{H}$

$\text{Car Y} = \overset{\oplus}{A}, \ \overset{\oplus}{D}, \ \overset{\ominus}{J},$

$\text{Car Z} = \overset{\oplus}{G}, \leftrightarrow \overset{\ominus}{F}, \ \overset{\ominus}{I}$

↔ = Married couple
⊕ = Male
⊖ = Female

96. (*a*) Four persons travel in car X.

97. (*d*) ABD group represents all males.

98. (*d*) GFI travel in same car.

99. (*c*) B is the husband of C.

100. (*b*) J travels in car Y.

Solutions (Q. Nos. 101-105)

Months	Feb	April	July	Sep	Nov	Dec
Cities	Kolkata	Delhi	Ahmedabad	Bengaluru	Chennai	Mumbai
Friends	Deepak	Ranjan	Abhishek	Salil	Mridul	Pritam
Brides	Geetika	Hema	Veena	Jasmine	Ipsita	Brinda

101. (*c*) Hema's husband is Ranjan.

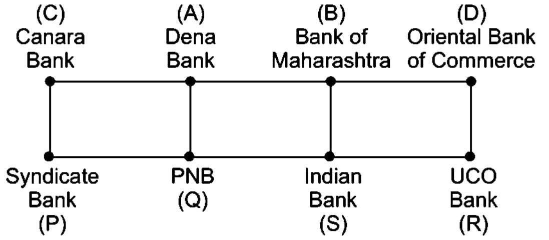
102. (*c*) Deepak's weeding took place in Kolkata.

103. (*d*) Pritam was married in Mumbai in the month of December.

104. (*a*) Salil's wedding was held in Bengaluru.

105. (*d*) Ipsita's wedding took place in Chennai.

Solutions (Q. Nos. 106-113) *Following sitting arrangement is formed from the given information*



106. (*b*) The person from Bank of Maharashtra is an immediate neighbour of A.

107. (*e*) S is the person between R and the person from PNB.

108. (*d*) The person from Syndicate Bank *i.e.,* P and D are sitting at the extreme ends of the rows.

109. (*a*) The person from Indian Bank *i.e.,* S faces the person from Bank of Maharashtra.

110. (*d*) D is related to Indian bank in the same manner.

111. (*d*) Except Q, all are the extreme ends of a row.

112. (*c*) P represents Syndicate Bank.

113. (*e*) C belongs to Canara Bank.

Solutions (Q. Nos. 114-115) Clearly, C is the second and A is the second last reader. There are two readers between B and A. So, E must be the third reader. Now, sequence is

B	C	E	A	D
1	2	3	4	5

114. (*b*) B passed the newspaper to C.

115. (*d*) D reads the newspaper last.

Solutions (Q. Nos. 116-119)

Stage I

As, A, B, D and E won atleast one match, hence C and F lost all the three matches. As, B, D and E lost atleast one match, A won all the three matches in stage I, there are total of 9 matches and a total of 9 wins.

So, B, D and E won two matches each.

Since, A (the top team of stage I) did not play against F, A played a match against B and a match against C.

So, 9th match is between B and F.

So, the position of 9 matches that have taken place are as follows.

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
Won	A	B	A	D	E	A	D	E	B
Lost	D	E	B	C	C	C	F	F	F

Stage II

As each team played a total of 5 matches, the matches take place between the two teams as (A, E), (A, F), (B, C), (B, D), (E, D) and (C, F). It is given that in stage II, three teams lost all the two matches. It is also given A lost the two matches.

Hence, each of E and F won the two matches.

This implies that C and D lost the two matches. Therefore, B also won the two matches.

116. (*b*) E and F defeated A (the top team in stage I).

117. (*d*) Only B, E and F won both the matches in stage II.

118. (*d*) D and F won exactly two matches in the event.

119. (*d*) B and E won four matches each which is the highest in the event.

Soltuions (Q. Nos. 120-121)

120. (*e*) According to the information, there are three teachers, two engineers and one doctor. As the youngest among them is Z, who is a doctor, his age must be 31 yr. The persons from Bengaluru and Chennai are engineers, while the persons from Kolkata, Kochi and Mumbai are teachers. Therefore, the person who is doctor must be from Hyderabad.

The person who got down at Mughal Sarai is a teacher and is less than 34 yr old.The person from Kochi and Chennai are 35 yr old. The person from Bengaluru got down at Koderma, while the person from Hyderabad got down at Kanpur.

The given information can be represented as

Age	Person	Profession	Belongs to	Departure
> 35	—	Teacher	Kolkata	
> 35	—	Engineer	Bengaluru	Koderma
35	—	Engineer	Chennai	
35	W	Teacher	Kochi	
(31-34)	Y	Teacher	Mumbai	Mughal Sarai
31	Z	Doctor	Hyderabad	Kanpur

Clearly, out of the given options, only option (e) is correct.

121. (*d*) As W is neither the youngest nor the oldest among the travellers who belong to her profession, she must be teacher from Kochi.

20

Data Sufficiency

Data Sufficiency is to check and test the given set of information, whether it is enough to answer a question or not. This test is designed to test candidate's ability to relate given information to reach to a conclusion. Moreover test has wider attributes to test about the candidate. One hand it may have problems from any of the topics of reasoning or quantitative aptitude and on the other hand it can test candidate's analytical ability.

Different types of questions covered in this chapter are as follows

- Problems Based on Two Statements
- Problems Based on Three Statements

Generally, a question on any of the topics of sequences, ranking, puzzle test, coding-decoding, blood relations, ordering or mathematical calculations etc., is given followed by two, three or any number of statements. These statements may contain information to arrive at the answer to the question. You have to decide which of the statement(s) is/are sufficient to answer the given questions.

The first step in solving a data sufficiency problem is to look at the question asked without the statements. You will not be able to answer the question because you will need more data. Now, examine Statement I alone. See whether you have enough data to answer the question or not. Remember, or note down, whether Statement I alone was enough to solve the problem.

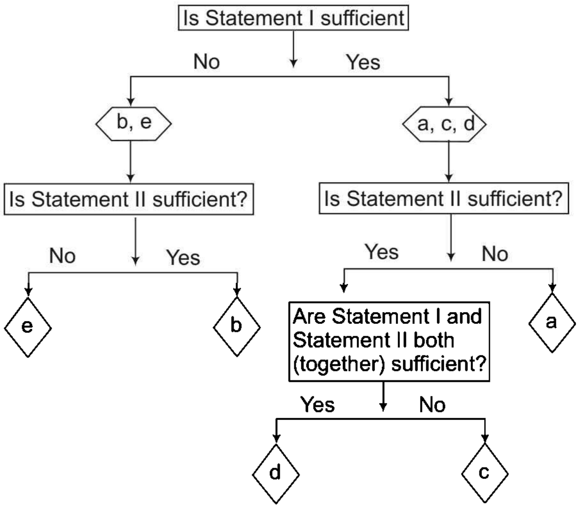
Now, look at Statement II alone and see whether it provides enough data to enable you to answer the question. Often, you will have to use both statements to answer the question and sometimes, both Statements I and II together will not provide enough information.

Candidates have to decide whether the data (the information) is sufficient to answer the question.

The possible choices are given in a logical order

(a) if Statement I alone is sufficient to answer the question
(b) if Statement II alone is sufficient to answer the question
(c) if either I or II alone is sufficient to answer the question
(d) if both Statements I and II taken together are sufficient to answer the question
(e) if neither I nor II is sufficient to answer the question

Flow Chart for Solving Data Sufficiency Questions


Is Statement I sufficient
No
Yes
b, e
a, c, d
Is Statement II sufficient?
No
Yes
Is Statement II sufficient?
Yes
No
e
b
Are Statement I and Statement II both (together) sufficient?
a
Yes
No
d
c

Similar steps are also followed when more than two statements are given, to obtain the answer.

K Memory *Add-ons*

- If you can reach to the answer from certain data, then it is not necessary to calculate the exact answer for that.
- While doing data sufficiency problems, do not waste time by pushing through unnecessary calculations but of course, any calculations which are needed to determine the usefulness of certain data must be done.
- If you find the Statement I alone is sufficient to answer the question do not blindly put down this as your answer. Look at Statement II alone also. If Statement II also is sufficient, then answer will be different.

In most of the competitive exams, the questions related to data sufficiency are basically asked in two different formats where either two statements or three statements are given.

Based on this, we have classified data sufficiency questions into two following types

Type 1 Problems Based on Two Statements

In this type of problems, two statements are provided which contain some information. The candidates are required to analyse and solve these statements based on certain criteria and two determine whether a single statement or both statements or none of the statements or either of the two statements is sufficient to reach to the answer/solution of the problem.

Directions (Example Nos. 1-3) The given questions are followed by two statements labelled as I and II. You have to decide, if these statements are sufficient to conclusively answer the question.

Give answer

(a) if Statement I alone is sufficient to answer the question
(b) if Statement II alone is sufficient to answer the question
(c) if Statements I and II together are needed to answer the question
(d) if Statements I and II together are not sufficient to answer the question
(e) none of the statement is sufficient to answer the question

***Ex* 1** Who is older Ritu or Situ?

I. Situ was born in the year 1980 and is 5 yr younger than Ritu's brother.

II. Ritu is twice as old as her brother.

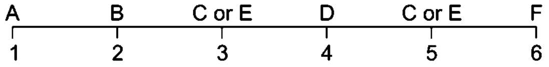
Sol. (*c*) On the basis of Statement I, we can be certain that Situ is younger than Ritu's brother but we cannot find the age relationship between Ritu and Situ. Therefore, Statement I alone is not sufficient to answer the question. Statement II alone is not sufficient to answer the question as from this also we cannot establish age relationship between Situ and Ritu. From Statement I, we find that Ritu's brother is older than Situ and from Statement II, we find that Ritu is older than her brother. From both the statements, we can conclude that Ritu is older than Situ.

***Ex* 2** Six persons A, B, C, D, E and F are sitting in a row. A and F are sitting at two extreme ends of the row. B is to the immediate right of A and D is 2nd left of F. What is the position of E with respect to A?

I. E is to the right of A.

II. E is to the left of C.

Sol. (*b*) On the basis of the statements given in the question we can arrange the persons in a row in the following way



So, the position of C and E can be either 3rd or 5th.

From the Statement I, we get that E is to the right of A and hence, position of E can be either 3rd or 5th.

Therefore, Statement I alone is not sufficient to answer the question. Statement II fixes the position of C at 5th and E at 3rd place, respectively. Therefore, we get our answer from Statement II alone. To be precise think about absence of Statement I. Statement II is sufficient to fix the position of C and E.

***Ex* 3** What is the sum of first two even natural numbers out of a group of five even natural numbers?

I. The second number is double of the first number.

II. All the five numbers are consecutive even numbers.

Sol. (*c*) From Statement II, the five numbers are consecutive even numbers.

From Statement I, second number is double of first number. On combining both Statements I and II, we get

First number = 2 and second number = 4

(since, this is the only possibility in case of consecutive even numbers, where second number is double of first number)

∴ Sum of first two numbers = 2 + 4 = 6

So, both Statements I and II are required to answer the question.

Directions (Example Nos. 4-5) Each of the questions below consists of a question and two statements numbered I and II given below. You have to decide whether the data provided in the statements are sufficient to answer the question.

[CMAT 2014]

Given answer

(a) if Statement I alone is sufficient but Statement II alone is not sufficient

(b) if Statement II alone is sufficient but Statement I alone is not sufficient

(c) if both Statements I and II together are sufficient but neither of Statement alone is sufficient

(d) if each statement alone is sufficient

***Ex* 4** What is the value of 144$16★7#9?

I. '$' means '÷', '★' means '×' and '#' means '+'.

II. 1 6 $ 4 ★ 2 # 2 = 10

Sol. (*a*) From Statement I, $144 \$ 16 \star 7 \# 9 \Rightarrow 144 \div 16 \times 7 + 9 \Rightarrow \frac{144}{16} \times 7 + 9 \Rightarrow 63 + 9 \Rightarrow 72$

Hence, Statement I alone is sufficient to answer the question.

***Ex* 5** How many children are there in the row of children facing North?

I. Vasudha who is fifth from the left end is eight to the left of Anish who is twelfth from the right end.

II. Rahul is fifth to the left of Neeta who is seventh from the right end and eighteenth from the left end.

Sol. (*d*) From Statement I, Total number of students = 12 + 8 + 5 − 1 = 24

From Statement II, Total number of students = 18 + 7 − 1 = 24

Therefore, both the statements are individually sufficient to answer the question.

Practice Corner **20.1**

Build your Confidence...

Directions (Q. Nos. 1- 44) Each of the following questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question.

Give answer

(a) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question

(b) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question

(c) if the data either in Statement I alone or Statement II alone are sufficient to answer the question

(d) if the data in both the Statements I and II together are not sufficient to answer the question

(e) if the data in both the Statements I and II are together necessary to answer the question

1. How will 'walk' be written in a certain code?

I. In this code 'morning walk is good' is written as 'na pa ta sa'.

II. In this code 'wish you good morning' is written as ' la na sa da'. **[SBI (PO) 2010]**

2. What is the code of 'market'?

I. '**do not** go' is coded as 'ka ma tok'.

II. 'go to market' is code as 'ma jo la'. **[SBI (PO) 2009]**

3. Which of the following means 'very' in a certain code language?

I. 'pit jo ha' means 'very good boy' in that code language.

II. 'jo na pa' means 'she is good' in that code language.

4. In a code language, 'al ed hop' means 'we play chess'. What is the code of word 'chess'?

I. '**id nim** hop' means 'we are honest'.

II. 'gob ots al' means 'they play cricket'.

5. In a certain code language, '146' means 'adopt good habits'. What is the code of 'habit' in that language?

I. **'473' means** ' like good pictures'.

II. '826' means 'passion becomes habits'.

6. How will 'must' be written in a certain code?

I. In that code language, 'you must see' is written as 'la pa ni' and 'did you see' is written as 'jo ni pa'.

II. In that code language 'you did that' is written as 'pa si jo'. **[SBI (PO) 2009]**

7. What is the code of 'fat' in a certain code language?

I. In that code language, 'she is fat' is written as 'he ra ca'.

II. In that code language, 'fat boy' is written as 'ra ka'.

8. How is 'call' written in a code language?

I. 'call me back' is written as '531' in that code language.

II. 'you can call me any time' is written as '94163' in that code language.

9. If 'over and above' is written as 'ja na ta' in a code language, how is 'and' written in that code language?

I. 'come and go' is written as 'ha la ja' in that code language.

II. 'he and you' is written as 'da ja ma' in that code language.

10. What does '$' mean in a certain code language?

I. '5 $ # 3' means 'flowers are really good'.

II. '7 # 3 5' means 'good flowers are available'.

11. On which date is Amit's birthday in September 2010?

I. Last year his birthday was on the last Thursday of the month in September 2009.

II. This year his birthday will be on the last Friday of the month in September 2010. **[SBI (PO) 2010]**

12. On What day of the week does Aarti's birthday fall?

I. Sonu correctly remembers that Aarti's birthday comes after Wednesday but before Sunday.

II. Raj correctly remembers that Aarti's birthday comes before Friday but after Tuesday. **[SBI (PO) 2009]**

13. On what day of the week does Arun's birthday fall?

I. Arun's brother correctly remembers that Arun's birthday comes after Wednesday but before Sunday.

II. Arun's sister correctly remembers that Arun's birthday is before Friday. **[Andhra Bank (PO) 2010]**

14. On which day in June did the school reopen?

I. Manoj correctly remembers that the school reopened after 12th June but before 16th June.

II. Manoj's classmate Ashok correctly remembers that the school reopened after 14th June but before 18th June.

15. On which day of the same week is Ramesh's exam scheduled (Monday being the first day of the week)?

I. Ramesh correctly remembers that his exam is scheduled on a day after Tuesday but before Thursday of the same week.

II. Ramesh's friend correctly remembers that Ramesh's exam is scheduled on the third day of the week.

16. How is M related to F?

I. F is the sister of N who is the mother of R.

II. M has two brothers, R is one of them. **[SBI (PO) 2008]**

17. How is Nalini related to Sameer?

I. Brother of Nalini is the only grandson of Sameer's father.

II. Nalini has only one brother.

18. How is Sheela related to Ninad?

I. Father of Ninad is the grandfather of Sheela's son.

II. Sheela has only one brother. **[SBI (PO) 2009]**

19. How is Nikhil related to Rama?

I. Nikhil is the only grandson of Rama's father-in-law.

II. Rama has no brother-sister. **[SBI (PO) 2008]**

20. How is Nisha related to Nidhi?

I. Mother of Nisha is the sister of Nidhi's father.

II. Nidhi is the daughter of only son of Nisha's grandfather.

21. How is D related to M?

I. D has two brothers and one sister.

II. Brother of M is married to D's sister. **[Hotel Mgmt 2011]**

22. How many sisters does P have?

I. M and T are sisters of K.

II. D is husband of B who is mother of K and P.

23. How many sisters does P have?

I. T and V are only sisters of D.

II. D is brother of P.

24. Among P, K, D and R, who is the son of M?

I. P and K are sisters of R.

II. D is the mother of K and wife of M.

25. H is in which direction in respect of L?

I. L is to the East of M which is to the North of H.

II. L is to the North of J which is to the East of H.

26. Point X is in which direction in respect of point Y?

I. Point Z is at equal distance from point X and point Y.

II. Point X is at a distance of 5 km from point Y. **[SBI (Clerk) 2011]**

27. Tower Q is in which direction of tower P?

I. P is to the West of H, which is to the South of Q.

II. F is to the West of Q and to the North of P. **[SBI (PO) 2008]**

28. Village D is in which direction in respect of village H?

I. Village H is to the South of village A, which is to the South-East of Village D.

II. Village M is to the East of village D and to the North-East of Village H. **[SBI (PO) 2008]**

29. Kumud is facing which direction?

I. Nikhil is facing North and if he turns to his left he faces opposite direction as that of Kumud.

II. Saroj who is facing East is to the right of Kumud.

30. In which direction is point E, with reference to point S?

I. Point D is to the East of point E and point E is to the South of point F.

II. Point F is to the North-West of point S. Point D is to the North of point S.

31. Who amongst P, Q, R, S and T is the tallest?

I. P is taller than Q. T is not the tallest.

II. R is taller than P. S is not the tallest.

32. Who is shortest among T, F, L, Q and R?

I. F is shorter than L and Q, but not as short as T and R.

II. T is shorter than F, but is not the shortest. **[UBI (PO) 2009]**

33. Seventeen people are standing in a straight line facing South. What is Bhavna's position from the left end of the line?

I. Sandeep is standing second to the left of Sheetal. Only five people stand between Sheetal and the one who is standing at the extreme right end of the line. Four people stand between Sandeep and Bhavan.

II. Anita is standing fourth to the left of Sheeta. Less than three people are standing between Bhavna and Anita. **[SBI (PO) 2013]**

34. Among Sanjay, Suresh, Navin, Prakash and Karan, who has secured maximum marks in Mathematics?

I. Karan has secured more marks in Mathematics than Suresh and Navin.

II. Sanjay and Prakash have secured less marks in Mathematics than Navin.

35. How is 'cost' written in the given code language?

I. In the code language 'tell me the cost' is coded as '@ 0 # 9' and 'cost was very high' is coded as '& 6 # 1'.

II. In the code language 'some cost was discount' is coded as '187#' and 'some people like discount' is coded as '875%'. **[IBPS (Clerk) 2013]**

36. Is D the mother of S?

I. L is the husband of D. L has only three children.

II. N is the brother of S and P, P is the daughter of L.

37. Among five people — A, B, C, D and E sitting around a circular table facing the centre, who is sitting second to the left of D?

I. C is second to the left of A. B and D are immediate neighbours of each other.

II. D is to the immediate left of B. E is not an immediate neighbour of D and B.

38. How is A related to B?

I. A is the sister-in-law of C, who is the daughter-in-law of B, who is the wife of D.

II. B is the mother of A's son's only uncle's son.

[NABARD 2009]

39. Among five friends—J, K, L, M and N each of a different height, who is the second tallest?

I. N is taller than M and K. K is shorter than M.

II. L is taller than N. J is not the tallest.

40. Point X is in which direction with respect to Y?

I. Point Z is at equal distance from both point X and point Y.

II. Walking 5 km to the East of point X and taking two consecutive right turns after walking 5 km before each turn leads to point Y. **[NABARD 2009]**

41. How many students are there in the class?

I. There are more than 20 but less that 27 students in the class.

II. There are more than 24 but less than 31 students in the class. The number of students in the class can be divided into groups such that each group contains 5 students.

42. The sum of ages of M, N and O is 50 yr. What is N's age?

I. N is 10 yr older than M.

II. O is 30 yr old.

43. Satish, Anoop and Sandeep's salary is in the ratio 4 : 5 : 7, respectively. How much is Anoop's salary?

I. The difference between Anoop and Sandeep's salary is double that of Satish and Anoop.

II. Anoop gets ₹ 4000 less than Sandeep.

44. What is the difference in the ages of P and K?

I. P is 20 yr older than M.

II. M is 2 yr younger than Z.

Directions (Q. Nos. 45-50) Each question consists of a problem followed by two statements numbered I and II. Decide whether the data in the statements are sufficient to answer the question. **[NIFT (UG) 2013]**

Give answer

(a) if Statement I alone is sufficient but Statement II alone is not sufficient to answer the question

(b) if Statement II alone is sufficient but Statement I alone is not sufficient to answer the question

(c) if both statements taken together are sufficient to answer the question but neither statement alone is sufficient

(d) if Statements I and II together are not sufficient and additional data is needed to answer the question

45. How many ewes (female sheep) in a flock of 50 sheeps are black?

I. There are 10 rams (male sheep) in the flock.

II. 40 of the animals are black.

46. If a and b are both positive, what percent of b is a?

I. $a = 3 / 11$

II. $b/a = 20$

47. What is the ratio of male to female officers in the police force in town T?

I. The number of female officers in 250 less than half the number of male officers.

II. The number of female officers is 1/7 the number of male officers.

48. What is the value of n

I. $3n + 2m = 18$

II. $n - m = 2n - (4 + m)$

49. If x and y are both positive integers, then how much greater is x than y

I. $x + y = 20$

II. $x = y^2$

50. Is w an integer?

I. 3w is an odd number.

II. 2w is an even number.

Response & Interpretations **(20.1)**

1. (*d*) From Statements I and II,

morning walk is good = na pa ta sa

wish you good morning = la na sa da

∴ walk = pa/ta

So, both the statements are not sufficient to answer the question.

2. (*d*) From Statements I and II,

do not go = ka ma tok

go to market = ma jo la

∴ market = jo/la

So, both the statements are not sufficient to answer the question.

3. (*d*) From Statements I and II,

pit jo ha = very good boy

jo na pa = she is good

∴ very = pit/ha

So, both the statements are not sufficient to answer the question.

4. (*e*) Given that,

al ed $\boxed{\text{hop}}$ = $\boxed{\text{we}}$ play chess ...(A)

From Statement I, id nim $\boxed{\text{hop}}$ = $\boxed{\text{we}}$ are honest

From Statement II, gob ots al = they play cricket

From Statement I and (A) , we = hop

From Statement II and (A) , play = al

Clearly, chess = ed

So, both statements are required to answer the question.

5. (*b*) Given that, 1 4 6 = adopt good habits ...(A)

From Statement I, 4 7 3 = like good pictures

From Statement II, 8 2 6 = passion becomes habits

From Statement II and (A), 6 = habits

So, Statement II alone is required to answer the question.

6. (*a*) From Statement I, you must see = la pa ni

did you see = jo ni pa

Clearly, must = la

From Statement II, you did that = pa si so

So, Statement I alone is sufficient to answer the question.

7. (*e*) From Statement I, she is fat = he ra ca

From, Statement II, fat boy = ra ka

Clearly, fat = ra

So, both statements are required to answer the question.

8. (*d*) From Statements I and II,

call me back = 5 3 1

you can call me any time = 9 4 1 6 3

∴ call = 3/1

So, both the statements are not sufficient to answer the question.

9. (*c*) Given that, over and above = ja na ta ...(A)

From Statement I, come and go = ha la ja

From Statement II, he and you = da ja ma

Clearly, either from (A) and I or from (A) and II, and = ja

So, either Statement I or Statement II alone are sufficient to answer the question.

10. (*e*) From Statements I and II,

5 \$ # 3 = flowers are really good

7 # 3 5 = good flowers are available

∴ \$ = really

So, both statements are required to answer the question.

11. (*c*) The calendar method is helpful in either case.

So, either Statement I or II alone are sufficient to answer the question.

12. (*e*) According to Sonu, birthday = Thursday/Friday/Saturday

According to Raj, birthday = Wednesday/Thursday.

∴ Required day of birthday = $\boxed{\text{Thursday}}$

So, both statements are required.

13. (*e*) According to brother, birthday = Thursday/Friday/ Saturday

According to sister, birthday = Thursday

Clearly, required day of birthday = $\boxed{\text{Thursday}}$

So, both statements are required to answer the question.

14. (*e*) According to the Manoj,

Required day = 13th June/14th June/15th June

According to the Ashok,

Required day = 15th June/16th June/17th June

∴ Required day = $\boxed{\text{15th June}}$

So, both statements are required to answer question.

15. (*c*) From Statement I,

$\boxed{\text{Between Tuesday and Thursday}}$

Required day = Tuesday, Wednesday, Thursday

From Statement II,

Required day = Monday, Tuesday, Wednesday

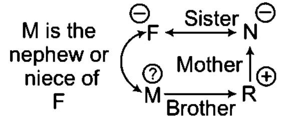
3rd day of week

So, either Statement I or II alone is sufficient to answer the question.

16. (*d*) Since, M is not available in Statement I while F is not available in Statement II.

So, none of the statements alone is sufficient.

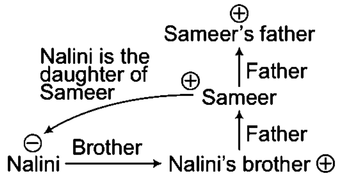
From Statements I and II, the final diagram is as under



Clearly, M is nephew/niece of F but as gender of M is not known, hence definite relation of M in respect of F cannot be determined.

So, both the statements are not sufficient to answer the question.

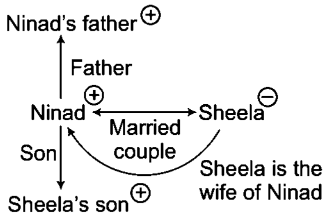
17. (*a*) From Statement I,



Clearly, Nalini is the daughter of Sameer.

So, Statement I alone is sufficient to answer the question.

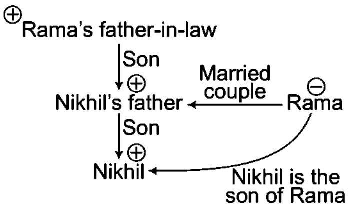
18. (*a*) From Statement I,


Ninad's father ⊕
Father
⊕
Ninad
Married couple
Sheela ⊖
Son
Sheela is the wife of Ninad
Sheela's son ⊕

Clearly, Sheela is the wife of Ninad.

So, Statement I alone is sufficient to answer the question.

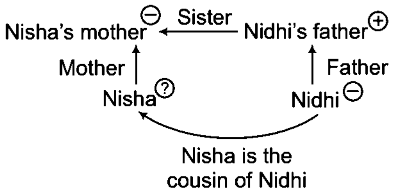
19. (*a*) From Statement I,


⊕ Rama's father-in-law
Son
⊕
Nikhil's father
Married couple
⊖ Rama
Son
⊕
Nikhil
Nikhil is the son of Rama

Clearly, Nikhil is Rama's son.

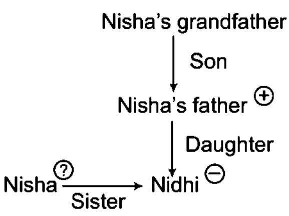
So, Statement I alone is sufficient to answer the question.

20. (*a*) From Statement I,


Nisha's mother ⊖
Sister
Nidhi's father ⊕
Mother
Father
Nisha ?
Nidhi ⊖
Nisha is the cousin of Nidhi

Clearly, Statement I alone is sufficient to answer the question.

From Statement II,

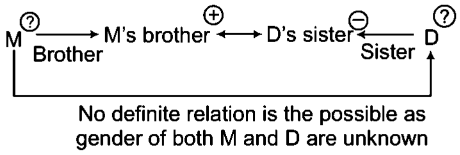

Nisha's grandfather ⊕
Son
Nisha's father ⊕
Daughter
Nisha ?
Sister
Nidhi ⊖

Here, gender of Nisha is unknown. So, the relation cannot be established.

So, Statement II alone is insufficient.

21. (*d*) Statement II is insufficient in itself.

From Statement II,


M ?
Brother
M's brother ⊕
D's sister ⊖
Sister
D ?
No definite relation is the possible as gender of both M and D are unknown

Hence, Statement II is also insufficient.

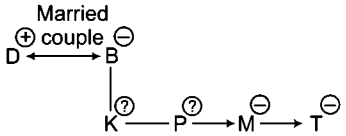
Further, no relation is possible from Statements I and II also.

So, both statements are insufficient to answer the question.

22. (*d*) I alone is insufficient as P is not available in it.

II alone is insufficient as gender of K is unknown.

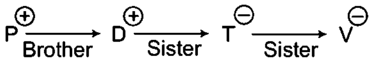
From Statements I and II,


Married
⊕ couple ⊖
D
B
K ?
P ?
M ⊖
T ⊖

Hence, Statements I and II both are insufficient as gender of K is not known.

23. (*e*) Neither of the statements is sufficient alone.

From Statements I and II,

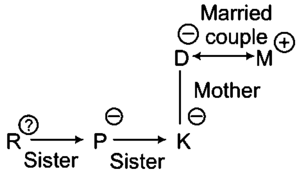

P ⊕
Brother
D ⊕
Sister
T ⊖
Sister
V ⊖

Hence, it is clear P has two sisters T and V.

So, both statements are required to answer the question.

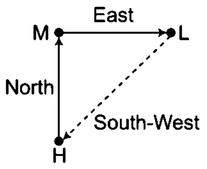
24. (*d*) It is clear that neither of the given statements is sufficient alone.

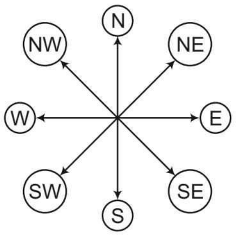
From Statements I and II,


Married
⊖ couple ⊕
D
M
Mother
⊖
R ?
Sister
P ⊖
Sister
K

Gender of R is unknown, hence Statements I and II together are not sufficient to answer the question.

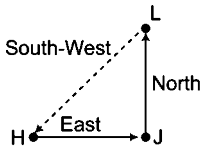
25. (*c*) From Statement I,


East
M
L
North
South-West
H


N
NE
E
SE
S
SW
W
NW

Clearly, H is to the South-West of L.

From Statement II,

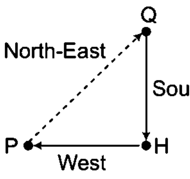

L
South-West
North
East
H
J

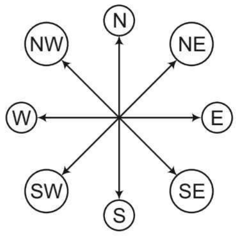
Clearly, H is to the South-West of L.

So, either Statement I or II alone is sufficient to answer the question.

26. (*d*) Both statements are insufficient to answer the question as directions is not given in any of the statements or we can say that data is inadequate.

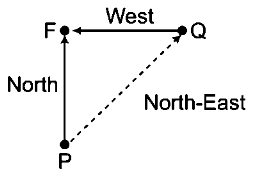
27. (*c*) From Statement I,


Q
North-East
South
P
H
West


N
NE
E
SE
S
SW
W
NW

Clearly, Q is to the North-East of P.

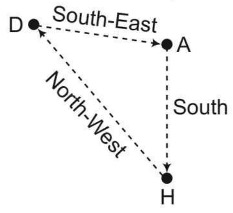
From Statement II,

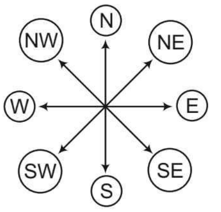

F
West
Q
North
North-East
P

Clearly, Q is to the North-East of P.

So, either Statement I or II alone can answer the question.

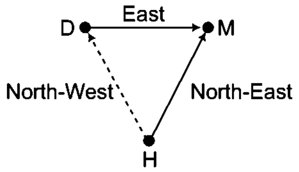
28. (*c*) From Statement I,


D
South-East
A
North-West
South
H


N
NW
NE
W
E
SW
SE
S

Clearly, D is to the North-West of H.

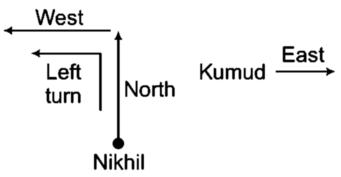
From Statement II,

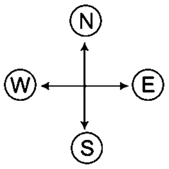

D
East
M
North-West
North-East
H

Clearly, D is to the North-West of H.

So, either Statement I or II alone can answer the question.

29. (*a*) From Statement I,


West
Left turn
North
Nikhil
Kumud
East



Clearly, after left turn Nikhil will face West. Hence, Kumud will face the direction opposite to what Nikhil will face after the left turn. Hence, Kumud will face East which is opposite to West what Nikhil is facing.

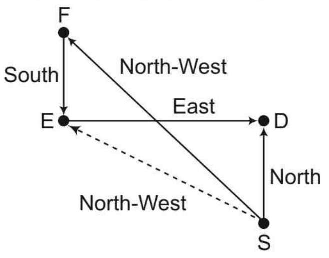
Hence, Statement I alone is sufficient to answer the question.

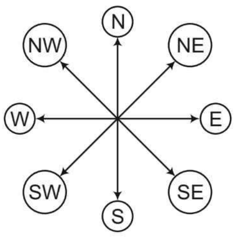
From Statement II, it is not clear that kumud is facing which direction. Hence, only Statement I alone is sufficient to answer the question.

30. (*e*) Statement I has no S and Statement II has no E.

Hence, neither of the two statements is sufficient alone.

From Statements I and II,


F
South
North-West
East
E
D
North
North-West
S


N
NW
NE
W
E
SW
SE
S

Clearly, E is to the North-West of S.

So, both statements are required to answer the question.

31. (*e*) It is clear that neither of the statements alone is sufficient.

From Statements I and II, R > P > Q and T and S are not the tallest.

Hence, R is the tallest. So, both Statements I and II are required to answer the question.

32. (*e*) From Statement I,

L/Q > F > T/R

Clearly, Statement I alone is insufficient.

From Statement II,

F > T but T is not the shortest.

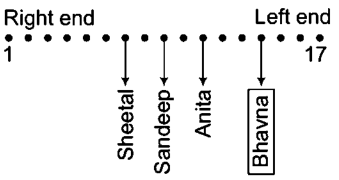
Clearly, Statement II alone is insufficient.

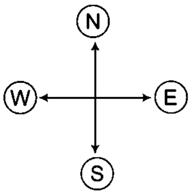
From Statements I and II, L/Q > F > T > R

Clearly, R is the shortest.

So, both statements are required to answer the question.

33. (*e*) From Statements I and II,


Right end
Left end
1
17
Sheetal
Sandeep
Anita
Bhavna



Thus, position of Bhavna can be found out by using both of the statements.

34. (*e*) From Statement I, Karan > Suresh/Navin

Clearly, Statement I alone is insufficient.

From Statement II, Navin > Sanjay/Prakash

Clearly, Statement II alone is insufficient.

But from both Statements I and II, it is clear that Karan has secured maximum marks. So, both statements are required to answer the question.

35. (*a*) From Statement I,

tell me $\underline{\text{the}}$ cost → @ 0 $\underline{\#}$ 9

cost was $\underline{\text{very}}$ high → & 6 $\underline{\#}$ 1

cost → #

From Statement II,

$\underline{\text{some}}$ cost was $\boxed{\text{discount}}$ → 1 $\underline{8}$ $\underline{7}$ #

$\underline{\text{some}}$ people like $\boxed{\text{discount}}$ → $\underline{8}$ $\underline{7}$ 5 %

⇒ some discount → 8 7

and cost → either 1 or #

Thus, we can get the code of 'cost' from Statement I only.

Hence, data in Statement I alone are sufficient to answer the question.

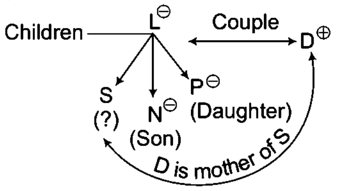
36. (*e*) From Statement I,

L is the husband of D. As L has three children, D also has three children.

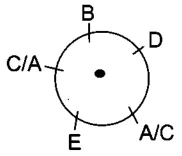
From Statement II, N, S and P are siblings and are the children of L and of D also.

Thus, D is the mother of S.

Hence, data in both the Statements I and II together are necessary to answer the question.


Children
L⊖
Couple
D⊕
S (?)
N⊖ (Son)
P⊖ (Daughter)
D is mother of S

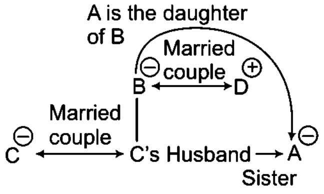
37. (*b*) From Statement II,



So, E is sitting second to the left of D.

Hence, data in Statement II alone is sufficient to answer the question.

38. (*a*) From Statement I,



Clearly, A is the daughter of B.

From Statement II, A's gender is unknown. Hence, relation cannot be established.

So, Statement I alone is sufficient to answer the question.

39. (*d*) From Statement I, $N > M > K$

From Statement II, $L > N$

From both the Statements, $L > N > M > K$

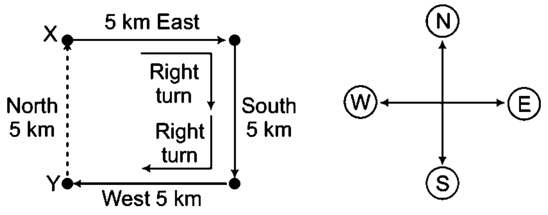
But height of J is not clear.

Thus, second tallest friend cannot be determined.

Hence, data neither in Statement I nor in Statement II are sufficient to answer the question.

40. (*b*) Statement I is insufficient as no direction is mentioned in it.

From Statement II,



Hence, X is to the North of Y.

So, Statement II alone is sufficient to answer the question.

41. (*e*) From Statement I,

Number of students in class = 21 or 22 or 23 or 24 or 25 or 26

From Statement II,

Number of students in class = 25 or 26 or 27 or 28 or 29 or 30

Since, number of students can be divided into groups of 5 students, therefore number of students must be a multiple of 5.

∴ Number of students in the class = 25 or 30

On combining Statements I and II,

Number of students in the class = 25

Hence, the data in both the Statements I and II together are necessary to answer the question.

42. (*e*) As given in the question, $M + N + O = 50$ yr

On combining Statements I and II, we get

$$N = 15 \text{ yr}$$

So, both statements are required to answer the question.

43. (*b*) As given in the question, the salaries of Satish, Anoop and Sandeep are 4x, 5x and 7x, respectively.

From Statement II, $7x - 5x = 4000$ and $x = 2000$

∴ Anoop's salary $= 5 \times 2000 = 10000$

So, Statement II alone is sufficient to answer the question.

44. (*d*) Relation between P and K cannot be established with the help of both Statements I and II. So, both the statements are not sufficient to answer the question.

45. (*d*) Both Statements I and II are not sufficient to answer the question.

46. (*b*) From Statement II, $\frac{b}{a} = 20 \Rightarrow b = 20a$

∴ Required percentage $= \frac{a}{b} \times 100 = \frac{a}{20a} \times 100 = 5\%$

So, Statement II alone is sufficient to answer the question but Statement I alone is not sufficient.

47. (*b*) From Statement I,

Let number of male officers $= x$

Then, number of female officers $= \frac{x}{2} - 250$

Now, ratio cannot be exactly calculated.

So, Statement I is insufficient.

From Statement II,

Let number of male officers $= y$

Then, number of female officers $= \frac{1}{7}y$

∴ Required ratio $= \frac{y}{\frac{1}{7}y} = \frac{7}{1} = 7 : 1$

So, Statement II alone is sufficient to answer the question but Statement I alone is not sufficient.

48. (*b*) From Statement I, $3n + 2m = 18$

From Statement II, $n - m = 2n - (4 + m)$

$\Rightarrow \quad n - m = 2n - 4 - m$

$\Rightarrow \quad 2n - n = 4 + m - m \Rightarrow n = 4$

So, the value of *n* can be calculated using Statement II alone but Statement I alone is not sufficient.

49. (*c*) From Statement I, $x + y = 20$

From Statement II, $x = y^2$

On putting $x = y^2$ in Statement I, we get

$$y^2 + y = 20 \Rightarrow y^2 + y - 20 = 0$$

$\Rightarrow \; y^2 + 5y - 4y - 20 = 0 \Rightarrow y(y + 5) - 4(y + 5) = 0$

$\Rightarrow \quad (y - 4)(y + 5) = 0$

$\therefore \quad y = 4, -5$

(since, x and y are the positive integers, so we cannot take $y = -5$)

Taking $y = 4$ and putting in Statement I,

$x + 4 = 20 \quad \therefore \quad x = 20 - 4 = 16$

Now, $x - y = 16 - 4 = 12$

Hence, x is greater than y by 12.

So, both statements are required to answer the question.

50. (*c*) When taking both statements I and II together

$3w$ = odd number

$2w$ = even number

It is possible only when w is an integer.

So, both statements are required to answer the question.

Type 2 Problems Based on Three Statements

In this type of questions, three statements are provided, which are loaded with certain information. The candidates are required to analyse the statement and has to draw conclusion. Apart from this they are required to check whether any one of the statement, combination of two or combination of the three statements are required to solve the problem or either of the statement or neither of the statements are sufficient to answer these problem.

Direction (Example No. 6) In the question below, three Statements I, II and III are given. You are required to find out which of the given statements is/are sufficient to answer the question.

***Ex* 6** What is the code of 'rope' in the code language?

I. In that code 'use the rope' is written as 'nik ta re'.

II. In that code language 'rope is straight' is written as 'pe da ta'.

III. In that code language 'always use rope' is written as 'ma re ta'.

(a) I and II or II and III
(b) I and III
(c) II and III
(d) I, II and III

Sol. (*a*) From Statements I and II, use the rope = nik ta re
rope in straight = pe da ta
∴ rope = ta
From Statements II and III, rope is straight = pe da ta
always use rope = ma re ta
∴ rope = ta
From Statements I and III, use the rope = nik ta re
always use rope = ma re ta
∴ rope = ta / re
Hence, Statements I and II or II and III are sufficient to find answer.

Practice Corner 20.2

Build your Confidence...

Directions (Q. Nos. 1-10) In each question below, three Statements I, II and III are given. You are required to find out which of the given statement (s) is/are sufficient to answer the question. Mark your answer accordingly.

1. On Which day Suresh went to Chennai, if week starts on Monday?

I. Suresh took leave on Wednesday.

II. Suresh went to Chennai the next day of the day his mother came to his house.

III. Suresh's mother came to his house neither on Monday nor Friday. **[IBPS (PO) 2011]**

(a) II and III
(b) I and II
(c) I and III
(d) All are needed
(e) Even I, II and III together are not sufficient

2. In which year was Tarun born?

I. Tarun is 6 yr older than Rabin.

II. Rabin's brother was born in 1982.

III. Tarun's brother is 2 yr younger than Rabin's brother who was 8 yr younger than him.

(a) I and III
(b) II and III
(c) All I, II and III
(d) I and II

3. Who among Girish, Prashant, Kamlesh and Jayesh is the youngest?

I. Kamlesh is younger than Jayesh but older than Girish and Prashant.

II. Jayesh is the oldest.

III. Girish is older than Prashant.

(a) I and II
(b) I and III
(c) II and III
(d) Only I

4. Who among P, Q, R, S and T is in the middle while standing in a line?

I. Q is to the right of T.

II. S is between P and T.

III. Q is between T and R.

(a) I and II
(b) II and III
(c) I and III
(d) All I, II, III

5. Point D is in which direction with respect to point B?

I. Point A is to the West of point B, point C is to the North of point B, point D is to the South of point C.

II. Point G is to South of point D. Point G is 4 m from pont B. Point D is 9 m from point B.

III. Point A is to the West of point B. Point B is exactly midway between point A and E. Point F is to the South of point E. Point D is to the West of point F.

[IBPS (PO) 2012]

(a) I and III (b) II and III (c) All required (d) I and II

(e) None of these

6. How old was Deepak on 30th July, 1996?

I. Deepak is 6 yr older than his brother Prabir.

II. Prabir is 29 yr younger than his mother.

III. Deepak's mother celebrated her 50th birthday on 15th June, 1996.

(a) I and II (b) All I, II and III

(c) II and III (d) None of these

7. On which day of the last week did Mohan definitely meet Pramod in his office?

I. Pramod went to Mohan's office on Tuesday and Thursday.

II. Mohan was absent for three days in the week excluding Sunday.

III. Mohan was not absent on any two consecutive days of the week.

(a) I and II

(b) I and III

(c) II and III

(d) Even with all I, II and III, the answer cannot be arrived at

8. Which of the following represents 'come' in a code language?

I. 'pit na ja od' means 'you may come here' in that language.

II. 'ja ta ter' means 'come and go' in that code language.

III. 'ha na pit ter' means 'you may go home' in that code language.

(a) I and II or I and III

(b) I and II

(c) All I, II and III

(d) II and III

9. Who among P, Q, R, S and T is the lightest?

I. Q is lighter than P and S and heavier than T.

II. P is heavier than Q and lighter than S.

III. R is heavier than Q.

(a) I and II

(b) I and III

(c) I, II and III

(d) II and III

10. How is Q related to T?

I. M and R are brothers.

II. S has two sons and one daughter, R being one of the sons.

III. S is the mother of T and married to Q.

(a) I and III

(b) Only III

(c) I and II

(d) II and III

Response & Interpretations (20.2)

1. (*e*) Statements I, II and III together are not sufficient as the required day can be anyone of Wednesday, Thursday, Friday and Sunday.

2. (*c*) From Statements II and III, it is clear that Rabin's brother was born in 1982, Tarun's brother was born in 1984 and Rabin was born in 1974.

From Statement I, it is given that Tarun is six year older than Rabin, hence we know that Tarun was born in 1968.

So, all Statements I, II and III are required to answer the question.

3. (*b*) From Statement I, Jayesh > Kamlesh > Girish/Prashant

Clearly, Statement I alone is insufficient.

From Statement III, Girish > Prashant

Clearly, Statement III alone is insufficient.

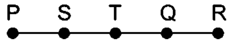
From both Statements I and III,

Jayesh > Kamlesh > Girish > Prashant

Clearly, Prashant is the youngest.

So, Statements I and III are required to answer the question.

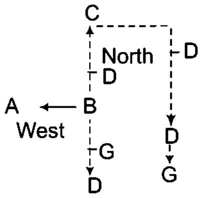
4. (*d*) From all the Statements I, II and III, the order of ranking of P, Q, R, S and T in a line is as



Hence, T is in between the line.

So, all the Statements I, II and III are required to answer the question.

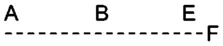
5. (*a*) From Statements I and II,



Clearly, points D and G can be anywhere on the dotted line.

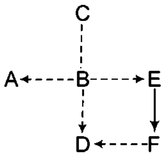
Hence, exact direction of D cannot be determined.

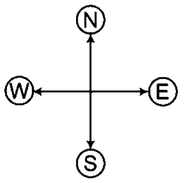
From Statements II and III,



Point D can be anywhere on the dotted line. Hence, positions of G and D and their directions in respect of B cannot be determined.

From Statements I and III,





Clearly, D is to the South of B.

So, Statements I and III are required to answer the question.

6. (*b*) From Statement III,

Deepak's mother's age as on 15th June, 1996 = 50 yr

From Statements II and III,

Prabir's age as on 15th June 1996 = 50 – 29 = 21 yr

From Statements I, II and III,

Deepak's age as on 15th June, 1996 = Prabir's age + 6

= 21 + 6 = 27 yr

∴ Deepak's age as on 30th July, 1996

= 27 yr and 1.5 months

So, all Statements I, II and III are required to answer the question.

7. (*d*) All the statements taken together are insufficient to answer the question.

8. (*b*) From Statements I and II,

pit na ja od = you may come here

ja ta ter = come and go

∴ come = ja

From Statements II and III,

ja ta ter = come and go

od na pit ter = you may go home

go = ter

∴ come = ja/ter

From Statements I and III,

pit na ja od = you may come here

ha na pit ter = you may go home

you may = na pit

∴ come = ja/od

Clearly, Statements I and II are required to find the answer.

9. (*b*) From Statements I and II,

$S > P > Q > T$

But no information is given about R.

Hence, I and II are not sufficient.

From Statements II and III,

$S > P > Q$

Also, $R > Q$

But no comparison is given between P, S and R and information about T is missing.

From Statements I and III,

$S / P / R > Q > T$

Clearly, T is the lightest.

So, Statements I and III are sufficient to answer the question.

10. (*b*) From Statements I and II, it is not possible as no information is given about Q and T.

From Statement III, it is obvious that Q is the father of T (from Statements I and III) or (Statements II and III) is not possible as Statement III alone is sufficient.

As Statement III alone is sufficient, (I + II + III) is also not possible.

So, only Statement III is sufficient to answer the question.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-39) Each of the questions below consists of a question and two statements numbered I and II given below. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements.

Give answer

(a) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question

(b) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question

(c) if the data either in Statement I alone or in Statement II alone are sufficient to answer the question

(d) if the data given in both the Statements I and II together are not sufficient to answer the question

(e) if the data in both the Statements I and II together are necessary to answer the question

1. What is Sudhir's rank from top in the class of 40 students?

I. Sudhir's rank is 10 rank below Nandini who is 35th from the bottom.

II. Sudhir's rank is 10 rank above Samir who is 24th from the top.

2. How many children does Sheela have? **[IRMA 2009]**

I. Ramila is the only sister of Shyam who is the only son of Sheela.

II. Shyam and Ramila have no more siblings.

3. All the four friends, *viz*. Ali, Kate, Rohan and Sonam who are sitting at the corners of a square table facing the centre. Find Kate's position with respect to Sonam. **[MHA-CET 2011]**

I. Ali sits second to the right of Sonam. Rohan sits to immediate left of Ali.

II. Kate sits second to the right of Rohan. Ali sits to immediate right of Kate.

4. Five letter A, E, G, N and R are arranged left to right according to certain conditions. Which letter is placed third? **[SBI (PO) 2013]**

I. G is placed second to the right of A. E is to the immediate right of G. There are only two letter between R and G.

II. N is exactly between A and G. Neither A nor G is at the extreme end of the arrangement.

5. Is X an odd number? **[MHA-CET 2009]**

I. X is multiplied by an odd number then result is an odd number.

II. X is not divisible by 2.

6. How many marks has Suman scored in the test? (maximum marks 20) **[Uttrakhand (GBO) 2012]**

I. Suman scored two digit marks. Her marks were not in decimals.

II. Suman scored more than 9 marks in the test.

7. In which month of the year did Rahul go abroad for a vacation? **[Uttrakhand (GBO) 2012]**

I. Rahul correctly remembers that he went for a vacation in the first half of the year.

II. Rahul's son correctly remembers that they went for vacation after 31st March but before 1st May.

8. How is 'over' written in a code language?

I. 'Over and again' is written as 'ka ja ha' in that code language.

II. 'Came and go' is written as 'ja pa na' in that code language.

9. Who is to the immediate right of Mohan when Mohan, Salil, Bhusan, Suresh and Jayesh are sitting around a circle facing at the centre?

I. Salil is 3rd to the left of Mohan.

II. Bhusan is between Salil and Jayesh.

10. How is N related to K?

I. N's brother is married to D.

II. D's sister is married to K.

11. Who among M, T, K, J and R is the shortest but one?

I. T is taller than J and R.

II K is shorter than R and M.

12. Who among N, F, P, J and D is the youngest?

I. P and J are younger than N and D.

II. F is younger than N, D and P but older than J.

13. B is the brother of D,D is the sister of K, K is the brother of M. How is M related to B?

I. P is mother of B.

II. H is husband of P.

14. A six story building with floors numbered 1, 2, 3, 4, 5 and 6, houses different people *viz.* A, B, C, D and E. Floor number 3 is vacant. On which of the floor does A live? **[MHA-CET 2011]**

I. C lives on an even numbered floor. A lives on a floor immediately above C's floor.

II. B lives on an even numbered floor. B's floor is not immediately above or immediately below the vacant floor. Only one person lives between B and C's floors. D lives immediately below E's floor.

15. What is the three-digit number? **[MHA-CET 2009]**

I. Three-digit number is a prime number.

II. The 1st and 3rd digit is 7.

16. Among M, P, T, R and W each being of a different age, who is the youngest? **[IBPS (PO) 2012]**

I. T is younger than only P and W.

II. M is younger than T and older than R.

17. How is 'gone' written in a code language? **[IBPS (PO) 2012]**

I. 'you will be gone' is written as 'ka pa ni sa' in that code language.

II. 'he will be there' is written as 'ja da ka ni' in that code language.

18. On which day of the week (starting from Monday and ending on Sunday of the same week) did Sushant visit Chennai? **[IBPS (PO) 2012]**

I. Sushant visited Chennai two days after his brother visited Chennai.

II. Sushant did not visit Chennai either on Wednesday or on Friday.

19. Towards which direction is P with respect to the starting point? **[IBPS (PO) 2012]**

I. P walked 20 m, took a right turn and walked 30 m again took right turn and walked 20 m towards West.

II. P walked 30 m, took a left turn and walked 20 m again took left turn and walked 30 m towards East.

20. How is K related to Z? **[IBPS (Clerk) 2012]**

I. Z and P are the only sisters of D.

II. D's mother is wife of K's father.

21. How many brothers does Ramu have?

I. Ramu's father has three children.

II. Ramu has two sisters.

22. Lal is taller than Nand, Jim is taller than Harry. Who among them is the tallest?

I. Jim is taller than Nand.

II. Lal is taller than Harry.

23. Who is the heaviest among Amol, Prabhu, Narayan and Navin?

I. Amol and Prabhu are of the same weight.

II. Prabhu's weight is more than Narayan but less than Navin.

24. How many daughters does 'L' have.

I. R's father has three daughters.

II. T is R's sister and the daughter of L.

25. Rajiv's rank is 17th in his class. What is his rank from the last?

I. There are 70 students in his class.

II. Abhijeet, who ranks 20th in Rajiv's class is 51st from the last.

26. On Which day was Yasir born? (His date of birth is February 29) **[SBI (PO) 2010]**

I. He was born between year 2005 and 2011.

II. He will complete 4 yr on February 29, 2012.

27. Out of 64 students, 38 play both chess and cricket. How many students play only chess? **[SBI (PO) 2010]**

I. Out of 64 students, 22 students don't play any game 4 students play only cricket.

II. Out of 64 students, 20 are girls and 10 of them don't play any game.

28. What is the total number of students in the school? **[IBPS (PO) 2012]**

I. The respective ratio of girls and boys is 2 : 3.

II. The number of students has grown by 5% this year as compared to 4% last year from the number 2000 which it was year before last.

29. Who among the six of them is the tallest, if Geeta is taller than Shilpa and Deepa is taller than Meeta?

(Sunita and Sadhana are the other two).

I. Sadhana is taller than Suntia.

II. Sadhana is taller than Shilpa and Meeta as well as Deepa.

30. Six peoples S, T, U, V, W and X are sitting around a circular table facing the centre. What is T 's position with respect to X? **[SBI (PO) 2013]**

I. Only two people sit between U and W, X is second to the left of W, V and T are immediate neighbours of each other.

II. T is to the immediate right of V. There are only two people between T and S. X is an immediate neighbour of S but not of V.

31. The ages of Aashima and Apsara are in the ratio 9 : 8. What is the age of Aashima? **[MHA-CET 2009]**

I. The ages of Aashima and Arpita are in the ratio 3 : 2.

II. After 6 yr the ratio of Aashima's and Apsara's ages will be 11 : 10.

32. D is the sister of C. How is D related to A?

I. A is sister of B.

II. B is the brother of C.

33. What is the code for 'she' in the code language?

I. In the code language 'she walks fast' is written as 'ka re pa'.

II. In the code language 'do it fast' is written as 'jo ta re'. **[NMAT 2008]**

34. Tower 'A' is in which direction with respect to tower D? **[IRMA 2009]**

I. Tower B is to the South of tower A and to the East of tower C.

II. Tower C is to the South of tower D.

35. How is 'light' coded in the code language? **[MHA-CET 2011]**

I. 'more light than dark' is coded as '3 2 1 7', 'no more dark here' is coded as '9 1 4 3'.

II. 'no more than that' is coded as '3 0 4 7' and 'no than and that' is coded as '4 5 0 7'.

36. How many rooms does your house have?

I. The number of rooms is the same as the number of family members in our house.

II. The number is sufficient to accommodate our family members.

37. Who is the best salesman in the company?

I. Rohit sold maximum number of air conditioners this summer.

II. The company made the highest profit this year.

38. What is the colour of the curtains on the stage?

I. The curtains have the same colour as the walls of the hall.

II. The colour of the curtains is quite appealing.

39. Who is a better artist–Abid or Hussain?

I. Abid had more art exhibitions.

II. The number of paintings sold by Hussain is more.

Directions (Q. Nos. 40-50) Each of these question is followed by two statements numbered I and II. Decide whether the data given in the statements are sufficient to answer the question. Mark answer as

Give answer

(a) if Statement I alone is sufficient but Statement II alone is not sufficient to answer the question
(b) if Statement II alone is sufficient but Statement I alone is not sufficient to answer the question
(c) if both Statements I and II together are sufficient to answer the question but neither statement alone is sufficient
(d) if Statements I and II together are not sufficient to answer the question

40. Who types at a faster rate, Navin or Sapan? **[NIFT (PG) 2013]**

I. The difference between their typing rates is 10 words per minute

II. Sapan types at a constant rate of 80 words per minute.

41. If we assume a constant reading rate, can Joel finish the book in 6 h? **[NIFT (PG) 2012]**

I. Joel reads 54 pages an hour.

II. In 2 h, he reads half the book.

42. In a certain packing houses, grapefruit are packed in bags and the bags are packed in cases. How many grapefruits are in each case, that is packed? **[NIFT (PG) 2013]**

I. The grapefruits always packed 5 to a bag and the bags are always packed 8 to a case.

II. Each case is always 80% full.

43. How many hits must a batsman get to raise his batting average to 300? **[NIFT (PG) 2012]**

I. He has batted, 56 times.

II. He has 14 hits now.

44. For a certain bottle and cork, what is the price of the cork? **[NIFT (PG) 2013]**

I. The combined price of the bottle and the cork is ₹ 95.

II. The price of the bottle is ₹ 75 more than the price of the cork.

45. Is the average age of the men less than 32? **[NIFT (PG) 2012]**

I. One-third of the men are younger than 25.
II. One-half of the men are between 25 and 30.

46. If John is exactly 4 yr older than Sunita, how old is John? **[NIFT (PG) 2012]**

I. Exactly 9 yr ago John was 5 times as old as Sunita was then.
II. Sunita is more than 9 yr old.

47. How many minutes does the clock lose a day? **[NIFT (PG) 2012]**

I. The clock reads 6:00 when it is really 5 : 48.
II. The clock is 40 s fast each hour.

48. Ram and Esha are in a line to purchase tickets. How many people are in the line? **[NIFT (PG) 2013]**

I. There are 20 people behind Ram and 20 people in front of Esha.
II. There are 5 people between Ram and Esha.

49. How much time will a computer need to solve 150 problems? **[NIFT (PG) 2012]**

I. The computer needs 50 s to solve the first problem.
II. A man needs 6 h to solve the problems.

50. If x and y are positive integers and x is a multiple of y is y = 2? **[NIFT (PG) 2013]**

I. $y \neq 1$
II. x + 2 is a multiple of y.

Directions (Q. Nos. 51-54) Each of the question below consists of a question and three statements numbered I, II and III given below it . You have to decide whether the data provided in the statement are sufficient to answer the question. **[IBPS (PO) 2011]**

51. How many daughters does of W have?

I. B and D are the sister of M.
II. M's father T is the husband of W.
III. Out of the three childrens which T has, only one is a boy.

(a) I and III are sufficient to answer the question
(b) All I, II and III are required to answer the question
(c) II and III are sufficient to answer the question
(d) Question cannot be answered even with all I, II and III
(e) I and II are sufficient to answer the question

52. Who among A, B, C, D, E and F, each having a different height is the tallest?

I. B is taller than A but shorter than E.
II. Only two of them are shorter than C.
III. D is taller than only F.

(a) I and II are sufficient to answer the question
(b) I and III are sufficient to answer the question
(c) II and III are sufficient to answer the question
(d) All I, II and III are required to answer the question
(e) All I, II and III even together are not sufficient to answer the question

53. Towards which direction is Village J from Village W?

I. Village R is to the West of Village W and to the North of Village T.
II. Village Z is to the East of Village J and to the South of Village T.
III. Village M is to the North-East of Village J and to the North of Village Z.

(a) Only III is sufficient to answer the question
(b) II and III sufficient to answer the question
(c) All I, II and III are required to answer the question
(d) Question cannot be answered even with all I, II and III
(e) None of the above

54. How is 'go' written in a code language?

I. 'now or never agin' is written as 'torn ka na sa' in that code language.
II. 'you come again now' is written as 'ja ka ta sa' in that code language..
III. 'again go now or never' is written as 'na ha ka sa torn' in that code language.

(a) I and III are sufficient to answer the question
(b) II and III are sufficient to answer the question
(c) I and II are sufficient to answer the question
(d) All I, II and III are required to answer the question
(e) None of the above

Response & Interpretations (Master Exercise)

1. (*c*) From Statement I, Required rank = [40 – (35 – 10) + 1] = 16th

From Statement II, Required rank = (24 – 10) = 14th

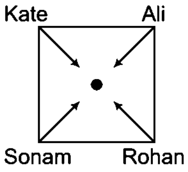
So, either Statement I or II alone are sufficient to answer the question.

2. (*a*) From Statement I, It is clear that Ramila and Shyam are the two children of Sheela.

From Statement II, It is not clear that what is the relation of Sheela with Shyam and Ramila.

So, Statement I alone is sufficient to answer the question.

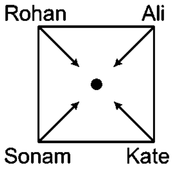
3. (*c*) From Statement I,



Clearly, Kate is to the immediate left of Sonam.

Hence, Statement I alone is sufficient.

From Statement II,



Clearly, Kate is to the immediate right of Sonam.

Hence, Statement II alone is sufficient.

So, either Statement I or II alone is sufficient to answer the question.

4. (*c*) From Statement I, R A _G E

Clearly, left place which is third, is replaced by N.

From Statement II, _A N G_ or _G N A_

Clearly, N is at third place.

Hence, the data in Statement I alone or in Statement II alone is sufficient to answer the question.

5. (*c*) Statement I alone is sufficient as an odd number when multiplied by another odd number results in an another odd number. Statement II is clear definition of odd number.

6. (*d*) Statement I is clearly insufficient and Statement II is insufficient as Suman can get any marks between 9 and 20.

Even statements (I + II) both are clearly insufficient.

So, both statements are insufficient to answer the question.

7. (*b*) Statement I is clearly insufficient and Statement II is sufficient as after 31st March and before 1st May, the only month is April.

∴ Required month = April

Hence, Statement II alone is sufficient to answer the question,

8. (*d*) From Statements I and II,

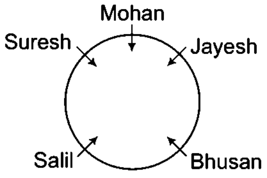
$\text{over } \boxed{\text{and}} \text{ again} \rightarrow \text{ka } \boxed{\text{ja}} \text{ ha}$

$\text{came } \boxed{\text{and}} \text{ go} \rightarrow \boxed{\text{ja}} \text{ pa na}$

∴ Over = ka / ha

Hence, both the statements are not sufficient to answer the question.

9. (*e*) Both the statements are required to answer the question.



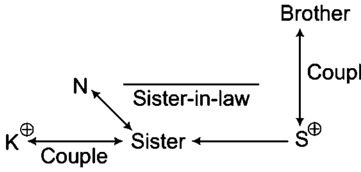
Hence, it is clear that Suresh is to the immediate right of Mohan.

So, Statements I and II are required to answer the question.

10. (*e*) From Statement I, D is sister-in-law of N.

From Statement II, K is husband of D's sister.

So, both the Statements I and II are required to answer the question.



11. (*d*) From both the statements,

T > J, R and R, M > K

So, both Statements I and II the insufficient to answer the question.

12. (*b*) Statement I,

N / D > P / J

Hence, Statement I alone is insufficient.

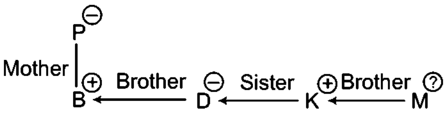
Statement II,

N / D / P > F > J

Clearly, J is the youngest.

Hence, Statement II alone is sufficient to answer the question.

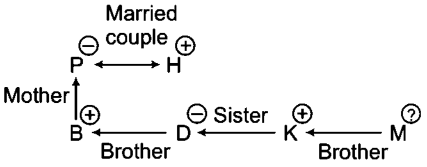
13. (*d*) From Statement I.



M is brother or sister of B but gender of M is not known, so exact relation of M with respect to B cannot be determined.

Hence, Statement I alone is insufficient and Statement II is also clearly insufficient.

From Statements I and II,



Again, gender of M is not given.

Hence, relation of M with respect to B cannot be determined.

So, Statements I and II together are not sufficient.

14. (*c*) From Statement I, C lives on an even numbered floor and A lives on floor immediately above C's floor. Also, floor 3 is vacant. So, it is obvious that C lives on 4th floor and A lives on 5th floor.
Hence, Statement I alone is sufficient to answer the question.
From Statement II,

People	B	A	C	—	E	E
Floor	6	5	4	3	2	1

Clearly, A lives on 5th floor.
Hence, Statement II alone is sufficient to answer the question.
So, either Statement I or II alone are sufficient to answer the question.

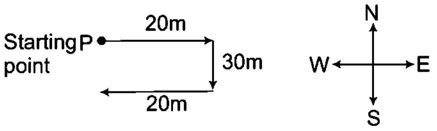
15. (*d*) Both the statements are insufficient to answer the question.

16. (*e*) It is obvious that Statements I or II alone are not sufficient.
From Statements I and II, P / W > T > M > R
Hence, R is the youngest.
So, Statements I and II both are required together to answer the question.

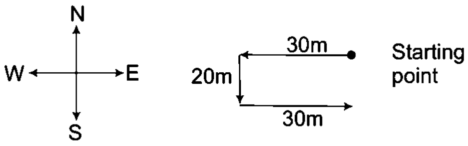
17. (*d*) It is obvious that Statements I or II alone are insufficient.
From Statements I and II,
you will be gone = ka pa ni sa
he will be there = ja da ka ni
Clearly, 'will be' = ka ni
∴ you gone = pa sa
∴ gone = pa/sa
So, both statements are insufficient to answer the question.

18. (*d*) Both the statements are insufficient to answer the question.

19. (*c*) From Statement I,

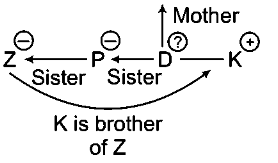


Clearly, P is in South direction with respect to starting point from Statement II,



Clearly, P is in South direction with respect to starting point.
Hence, either Statement I or II alone are sufficient to answer the question.

20. (*e*) Statement I alone is insufficient, as K is not available in it and Statement II alone is insufficient, as Z is not available in it.
From Statements I and II,



Clearly, K is the brother of Z.
So, both statements are required to answer the question.

21. (*e*) It is clear from both the statements that Ramu is the only brother of his two sisters. Hence, he has no brother.
So, both the statements are required to answer the question.

22. (*d*) Given that, Lal > Nand
Jim > Harry
From Statement I, Jim > Harry/Nand
Also, Lal > Nand
But no comparison is given between Lal and Jim.
Hence, Statement I alone is insufficient.
From Statement II, Lal > Harry/Nand
Also, Jim>Harry
But again no comparison is given between Lal and Jim. Hence, II alone is also insufficient.
Even it is very obvious from Statements I and II that they are together insufficient to answer the question.

23. (*e*) It is very obvious that both the statements alone are insufficient.
From Statements I and II, Navin > Amol = Prabhu > Narayan
Therefore, Navin is the heaviest.
Hence, Statements I and II both are sufficient to answer the question.

24. (*e*) From Statement II, it is clear that T is R's sister and it is given in Statement I that R's father has three daughters it means that L is the father of R and T both.
Hence, L has three daughters.
So, both statements are required to answer the question.

25. (*c*) Statements I and II are sufficient to answer the question.
From Statement I,
Rajiv's rank from the last = 70 – 17 + 1 = 54th
From Statement II, we can calculate the total number of students in the class = 20 + 51 – 1 = 70.
Now, we can calculate Rajiv's rank from the last.
So, either Statement I or II alone are sufficient to answer the question.

26. (*c*) From Statement I, as Yasir was born on 29th February between the year 2005 and 2011, his birth year will definitely be 2008 because 2008 is the only leap year between 2005 and 2011. Hence, from the calender method the day on 29th Feb, 2008 can be found. Hence, Statement I alone is sufficient.
From Statement II, Yasir will complete 4 yr on 29th Feb, 2012. It means he was born on 29th Feb, 2008, 4 yr back. Now, date and year is clear. Hence, again from the calender method the birthday can be calculated. Thus, Statement II alone is also sufficient.
So, either Statement I or II alone are sufficient to answer the question.

27. (*a*) From Statement I, out of 64, 4 students play only cricket.
So, remaining 64 – 4 = 60 and 22 students don't play any game.
∴ Remaining students = 60 – 22 = 38
Now, according to the statement 38 play both chess and cricket. So, none plays chess only.
Hence, Statement I alone is sufficient.
From Statement II, out of 64, 10 don't play any game, so remaining 64 – 10 = 54 and according to the statement 38 play both chess and cricket.

So, finally, we have to find the number of students who play only cricket which is not given. So,we cannot determine the number of students who play only chess.

Hence, Statement II alone is insufficient.

So, Statement I alone is sufficient to answer the question.

28. (*b*) Statement I is insufficient as total number of either boys or girls is missing.

From Statement II, initial number was 2000, then percentage increase is 4% and 5% per year consecutively.

$$\text{Number of students} = 2000\left(1+\frac{4}{100}\right)\left(1+\frac{5}{100}\right)$$

$$= 2000 \times \frac{26}{25} \times \frac{21}{20} = 2184$$

Hence, Statement II alone is sufficient.

So, Statement II alone is sufficient to answer the question.

29. (*d*) Given that, Geeta > Shilpa

and Deepa > Meeta

Other two are Sunita and Sadhana.

From Statement I, Geeta > Shilpa

Deepa > Meeta and Sadhana > Sunita

So, tallest cannot be determined.

Hence, Statement I alone is insufficient.

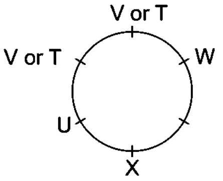
From Statement II, Sadhana>Shilpa/Meeta/Deepa

So, Sadhana >Shilpa/Deepa>Meeta/Sunita but nothing can be said about Geeta with respect to Sadhana.

Hence, either Sadhna or Geeta may be the tallest person.

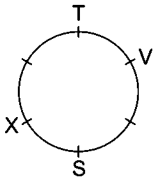
So, both the statements are insufficient to answer the question.

30. (*b*) From Statement I,



Hence, position to T with respect to X cannot be found out using the data provided in Statement I alone.

From Statement II,



Here it is clear that T is second to the left of X.

Hence, the data is Statement II alone are sufficient to answer the question.

31. (*b*) Statement I alone is not sufficient as it is very obvious.

From question and Statement II,

Let Aashima's age = $9x$ and Apsara's age = $8x$

According to the Statement II,

$$\frac{9x+6}{8x+6} = \frac{11}{10} \Rightarrow 90x + 60 = 88x + 66$$

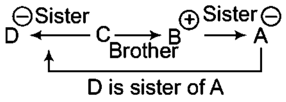
$$\Rightarrow \quad 2x = 6 \Rightarrow x = 3$$

$\therefore$ Aashima's age = $9x = 9 \times 3 = 27$ yr

Hence, Statement II alone is sufficient.

32. (*e*) Statement I is insufficient as relation link between B, C and D is missing. Statement II is insufficient as A is not available in it.

From Statements I and II,



So, both Statements I and II are needed to answer the question.

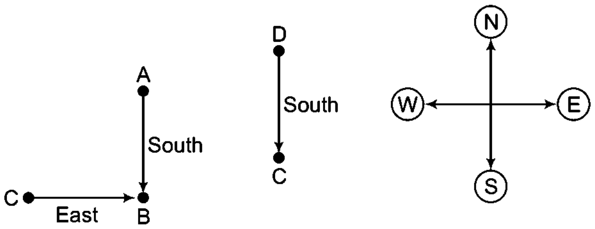
33. (*d*) From Statement I, she walks fast = ka re pa

From Statement II, do it fast = jo ta re

$\therefore$ she = ka/pa

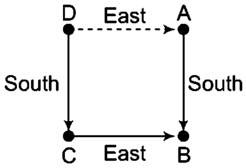
So, Statements I and II together are not sufficient to answer the question.

34. (*e*) From Statements I and II,



Hence, Statements I and II alone are insufficient.

From Statements I and II,



Clearly, A is to the East of D.

So, both Statements I and II are required to answer the question.

35. (*e*) From Statement I,

more light than dark = ③ 2 ① 7

no more dark here = 9 ① 4 ③

$\therefore$ light = 2/7

Hence, Statement I alone is insufficient, Statement II alone is insufficient as light is not mentioned in it.

From Statements I and II,

$\boxed{\text{more}}$ $\underline{\text{light}}$ than dark = $\boxed{3}$ $\underline{2}$ ①⑦

no $\boxed{\text{more}}$ dark here = 9 ① 4 $\boxed{3}$

no $\boxed{\text{more}}$ than that = $\boxed{3}$ 0 4 ⑦

no than and that = 4 5 ⓪ 7

$\therefore$ light = 2

So, both statements are required to answer the question.

36. (*d*) Data inadequate both Statements I and II are not sufficient to answer the question.

37. (*a*) Since, Rohit has sold the maximum number of items, hence he is the best salesman. So, Statement I alone is sufficient to answer the question.

38. (*d*) Data inadequate both Statements I and II are not sufficient to answer the question.

39. (*b*) As given in Statement II, the number of paintings sold by Hussain is more, hence he is the better artist.
So, Statement II alone is sufficient to answer the question.

40. (*d*) Both statements taken together are not sufficient to answer the question.

41. (*b*) Statement I is not sufficient because the number of pages in the book is not given.
Statement II is sufficient because in 2 h half of the book is read.
$\therefore$ 1 book $= 2 \times 2 = 4\,\text{h} < 6\,\text{h}$

42. (*a*) A bag has 5 grape fruits at a time and there are 8 such bags in a case.
$\therefore$ Total number of grape fruits in a case $= 5 \times 8 = 40$
Statement I alone is sufficient to answer the question but Statement II alone is not sufficient.

43. (*d*) For batting average total score of the batsman should be known. So, neither Statement I nor Statement II is sufficient.

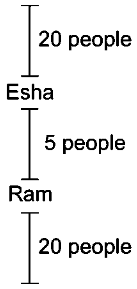
44. (*c*) From Statement II,
Let the price of cork be ₹ x.
Then, price of bottle = ₹ $(x + 75)$
Now, From Statement I,
Combined price bottle and cork = ₹ 95
$\therefore\ x + (x + 75) = 95$ (from Statements I and II)
$\Rightarrow\ 2x + 75 = 95 \Rightarrow 2x = 20 \quad \therefore\ x =$ ₹ 10
$\therefore$ Price of cork = ₹ 10
So, both statements are necessary to answer the question.

45. (*d*) Average age depends on the total age of all the men and number of men there but from both the statements we can not find the total age of all the men, so both statements are not sufficient.

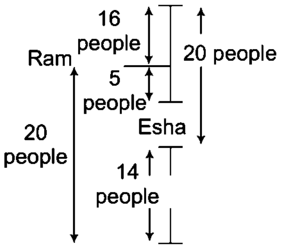
46. (*a*) Let the age of Sunita $= x$ yr
Then, age of John $= (x + 4)$ yr
From Statement I, $5(x - 9) = (x + 4) - 9$
$\Rightarrow\ 5x - 45 = x + 4 - 9 \Rightarrow 5x - x = -5 + 45$
$\Rightarrow\ 4x = 40 \quad \therefore\ x = \dfrac{40}{4}$
$\therefore$ Age of John $= (x + 4) = 10 + 4 = 14$ yr
So, Statement I alone is sufficient to answer the question, while Statement II alone is not sufficient.

47. (*c*) Statement I says clock is 12 min fast at 6 : 00.
Statement II says clock become fast by 40 s after each hour.
Thus, by combining these two equations we can find that how many minutes will the clock lose in 24 h.
So, both the Statements I and II together are sufficient to answer the question but neither statement alone is sufficient.

48. (*d*) From Statements I and II together, there are two possibilities



or



$\therefore$ Total people in line $= 14 + 1 + 5 + 1 + 14 = 35$

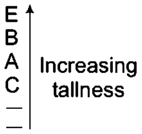
$\therefore$ Total people in line $= 20 + 1 + 5 + 1 + 20 = 47$
So, both statements taken together are not sufficient to answer the question.

49. (*d*) Statement I says how much time computer takes in solving first problem. So, we cannot find the time taken by computer in solving 150 problems.
Statement II We don't need the efficiency of work of computer because there is no relation between efficiency of work of man and work of computer.
So, neither Statement I nor II is sufficient.

50. (*c*) If x is a multiple of y and y $\neq 1$ (necessary to prove $y = 2$)
Also, $x + 2$ is also a multiple of y. Then, y is definitely = 2
So, both statements are required together to answer the question.

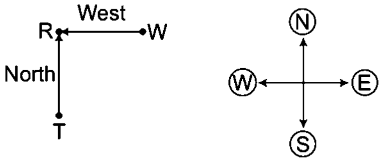
51. (*c*) From Statement II, T is the husband of W *i.e.,* T and W are a married couple.
From Statement III, Out of 3 childrens of T, one is a boy *i.e.,* he has two daughters and one son.
By combining Statements II and III, W has two daughters.
So, Statements II and III are sufficient to answer the question.

52. (*a*) By combining Statements I and II,

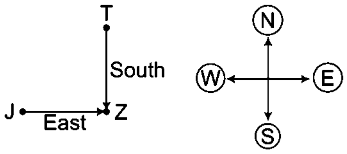


Hence, E is the tallest.
So, only Statements I and II are sufficient to answer the question.

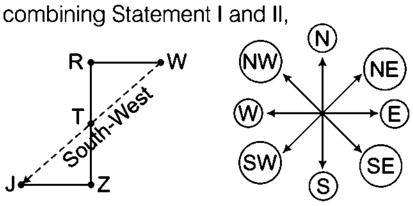
53. (*e*) From Statement I,



From Statement II,



By combining Statement I and II,



Clearly, J is in South-West direction from village W.
So, Statements I and II are required to answer the question

54. (*a*) From Statement I and III,
now or never again ⟶ torn ka na sa
again go now or never ⟶ na ha ka sa torn
$\therefore$ go = ha
So, Statements I and III are sufficient to answer the question.

21

Same Name and Address

'Same Name and Address' section is basically designed to check the clerical aptitude of a candidate and his comparing capabilities for a given data.

Different types of questions covered in this chapter are as follows

- Based on Date and Place
- Based on Name, Phone Number, Address and Pin Code
- Based on Two Similar Names and Addresses
- Based on One Odd Name and Address

In this chapter, the questions are based on finding out the same name and address of an individual. Candidates usually consider this chapter to be easy and less important, thereby committing mistakes while solving problems based on this chapter. The main reason for introducing this chapter or these types of questions is to identify 'Subtlety' in solving the given problems.

Several types of questions based on this chapter which are asked in exams are categorised as follows

Type 1 Based on Date and Place

In this type of questions, the name of a city and a date are given along with four alternatives. Only one out of these four alternatives is exactly same as the given question. The candidate is required to find out that alternative.

Direction (Example No. 1) In the following question, the name of a city and date are written along with four options (a), (b), (c) and (d). Among them one is exactly same to the combination given in the question. Find out the appropriate alternative which contains the correct combination as given in the question.

***Ex* 1** 26 January 2057, Flat-1B, Indian mall, Meerut.

(a) 28 January 2057, Flat-1B, Indian mall, Meerut
(b) 26 January 2057, Flat-1B, Indian molly, Meerut
(c) 26 January 2057, Flat-1B, Indian mall, Meerut
(d) 26 January 2057, Flat-1A, Indian mall, Meerut.

Sol. (c) Only option (c) is having same date and place as given in question.

Type 2 Based on Name, Phone Number, Address and Pin Code

In this type of questions, name, phone number, address and pin code are given along with four alternatives. Only one out of these four alternatives is exactly same as the given question. The candidate is required to find out that alternative.

Direction (Example No. 2) In the following question, a combination of name and address is given followed by four such combination, marked as (a), (b), (c) and (d). You have to find out the combination which is exactly the same as the combination given in question. The number of that option which contains that correct combination is the answer.

***Ex* 2** Nishita Rastogi, Q. No. 7, Nawal Vihar, Kuashambi-04 (9595959600)

(a) Nishita Rastogi, H.No.9, Nawal Vihar, Kuashambi-04 (9696969695)
(b) Nishita Rastogi, Q.No. 7, Nawal Vihar, Kuashambi-09 (9595959600)
(c) Nishita Rastogi, Q. No. 7, Nawal Colony, Kuashambi-04 (9596959695)
(d) Nishita Rastogi, Q. No. 7, Nawal Vihar, Kuashambi-04 (9595959600)

Sol. (*d*) By careful analysis, we find that Option (d) is exactly same as to the given question.

Practice Corner 21.1

Build your Confidence...

Directions (Q. Nos. 1-12) In each of the following questions, a combination of name and address is given in the first unnumbered column at the left, followed by four such combinations, one each under the column (a), (b), (c) and (d). You have to find out the combination which is exactly the same as the combination in the first unnumbered column. The number of that column which contains that correct combination is the answer.

		(a)	(b)	(c)	(d)
1.	Akhili Bhargawa G-15, Vazirpur Shimala-171001	Akhali Bhargawa G-15, Vazirpur Shimala-171001	Akhali Bhargawa G-15, Vazirpur Shimala-171010	Akhili Bhargawa G-15, Vazirpur Shimala-171001	Akhili Bhargawa G-15, Bazirpur Shimala-171001
2.	Anil Santhosh Kumar 3 West Club Road, Secunderabad -560003	Anil Santhosh Kumar 8 West Club Road, Secunderabad -560003	Anil Santhosh Kumar 3 East Club Road, Secunderabad -560003	Anil Santhosh Kumar 3 West Club Road, Secunderabad -550003	Anil Santhosh Kumar 3 West Club Road, Secunderabad -560003
3.	B Prakash Reddy House No. 24/91 Near Fatima College of Edn Warangal 463836	B Prakash Reddy House No. 24/91 Near Fatima College of Edn Warangal 483836	B Prakash Reddy House No. 24/91 Near Fatima College of Edn Warangal 463836	B. Prakash Reddy House No. 24/91 Near Fatima Collage of Edn Warangal 463836	B Prakash Reddy House No. 24/91 Near Fatema College of Edn Warangal 463836
4.	Dr D Raja Ganesan 3/27 Seventh Are, Malyands, Austratia W A 6051	Dr D Raja Ganesan 3/27 Seventh Are, Malyands, Austratia W A 6051	Dr D Raja Ganesan 3/27 Seventh Are, Malyands, Austratia W A 6052	Dr D Raja Ganesan 6/27 Seventh Are, Malyands, Austratia W A 6051	Dr D Raja Ganasan 3/27 Seventh Are, Malyands, Austratia W A 6051
5.	Himanshu Govil 13/72 Bapal Lane Hoshangabad-36087	Himanshu Govil 13/72 Bapal Lane Hoshangabad-36087	Himanshu Govil 3/72 Bapal Lane Hoshahgabd-36087	Himanshu Govil 13/72 Bapal Lene Hoshangabd-36087	Himanshu Govel 13/72 Bapal Lane Hoshangabd-36087
6.	Indira Eshwarappa Mandi Merchant Beemasamudra Chitradurga	Indira Eshahwarapa Mandi Merchant Beemasamudra Chitradurga	Indira Eshwarappa Mandi Marchant Beemasamudra Chitradurga	Indira Eshwarappa Mandi Merchant Beemasamudra Chitradurga	Indira Eshwarappa Mandi Merchant Baamasamudra Chitradurgra

		(a)	(b)	(c)	(d)
7.	K M Shankaran 32, Kedupulla Street Tyagrajan Nagar Tamilnadu	K M Shankaran 32, Kedupulla Streat Tyagrajan Nagar Tamilnadu	K M Shankaran 32, Kedupulla Street Tyagrajan Nagar Tamilnadu	K M Shankaran 32, Kedupulla Street Tyagrajan Nager Tamilnadu	K M Shankaram 32, Kedupulla Street, Tyagrajan Nagar Tamilnadu
8.	Lakshmi Narain 3468/78 Car Street Jolarpet	Lakshmi Narain 3468/78 Car Street Jolarpet	Lakshmi Narain 3468/78 Cor Street Jolarpet	Lakshmi Narain 3468/88 Car Street, Jolarpet	Lakshmi Nara yana 3468/78 Car Street Jolarpet
9.	Mersick Pradeep 161 Rahimatulla Rd Bombay 400013	Mersick Pradeep 161 Rahimatulla Rd Bombay 400023	Mersick Pradeep 161 Rahimatulla Rd Bombay 400031	Mersick Pradeep 161 Rahimatulla Rd Bombay 400013	Mersik Pradeep 161 Rahimatulla Rd Bombay 400031
10.	Mr K S Menon'Sagarika' Ramdaspur P O Gidhar Bihar 811305	Mr K S Menon'Sagareka' Ramdaspur P O Gidhar Bihar 811305	Mr S K Menon 'Sagarika' Ramdaspur P O Gidhar Bihar 811305	Mr K S Menon 'Sagarika' Ramdaspur P O Gidhar Bihar 811305	Mr K S Menon 'Sagarika' Ramdaspur P O Gidhar Bihar 811350
11.	Mr Ray Mohan, Kedar Nath Ram Nath & Co Meerut, India 6955132	Mr Ray Mohan, Kedar Nath Ram Nath & Co Meerut, India 6955132	Mr Roy Mohan, Kedar Nath Ram Nath & Co Meerut, India 6955132	Mr Ray Mohan, Kedar Nath Ram Nath & Co Meerut, India 6955123	Mr Rey Mohan, Kedar Nath Ram Nath & Co Meerut, India 6955132
12.	Mr W S Allen 8/81, Punjabi Bagh Bombay 538109	Mr W S Allan 8/81, Punjabi Bagh Bombay 538109	Mr W S Allen 8/81, Punjabi Bagh Bombay 538109	Mr W S Allen 8/81, Punjabi Bagh Bombay 538190	Mr W S Allen 81/8, Punjabi Bagh Bombay 538109

Directions (Q. Nos. 13-21) In each of the questions given below, a combination of Name and Address is given in the first unnumbered column at the left, followed by four such combinations one each under the column (a), (b), (c) and (d). You have to find out the combination which is exactly the same as the combination in the first unnumbered column. The number of that column which contains that combination is the answer. If all the combinations are different, then the answer is (e).

		(a)	(b)	(c)	(d)	(e)
13.	Uma Narayan Q. No. 4/632 'D' Jodhpur-24	Una Narayan Q. No. 4/632 'D' Jodhpur-24	Uma Narayan Q. No. 14/6932 'D' Jodhpur-24	Uma Narayan Q. No. 4/632 'B' Jodhpur-24	Uma Narayan Q. No. 4/632 'D' Jodhpur-24	None
14.	Suman Rastogi 46, Kothi Bagan, Panipat-2 Tel. 6895386	Susan Rastogi 46, Kothi Bagan Panipat-2 Tel. - 6895386	Suman Rastogi 64, Kothi Bagan, Pnipat-2 Tel. 6895386	Suman Rastogi 46, Kothi Bagan, Panipat-2 Tel. 6895386	Suman Rastogi 46, Hathi Bagan, Panipat-2 Tel. 6895386	None
15.	Kavita Parekh 731 D /936, MIG Viramgam-14	Kavita Parekh 713 /936, MIG Viramgam-14	Kavita Parekh 731 D/963, MIG Viramgam-14	Kavita Parekh 731 D/936, MIG Viramgam-14	Kavita Parekh 731 D/936, LIG Viramgam-14	None
16.	Fatima K Ahmad 4, Chuna Factory Bijnor-13	Fatima K Ahmad 4, Chana Factory Bijor-13	Fatima Ahmad 4, Chuna Factory Bijnor-13	Fatima K Ahmad 4, Chuna Factory Bijnor-13	Fatima K Ahmad 4, Chuna Factory Bijnor-31	None
17.	M/s Raghava Phoolgali-N Phn-2062258	M/s Raghava Phulgali-N Phn-2062258	M/s Raghava Phoolgali-N Phn 2662258	Mr/s Raghav Phoolgali-N Phn 2062258	M/s Raghava Phoolgali-N Phn -2062258	None
18.	Ramvati Gusain H. No. 19, Jamvaal Garhwal-15	Ramvati Gusain Qr. No, 19, Jamvaal Garhwal-15	Ramvati Gusain H. No. 19, Jamvaal Garhwal-15	Ramvati Gusain H. No. 19, Jamvaal Gadval-15	Ramvati Gusian H. No. 19, Jamvaal Garhwal-15	None

		(a)	(b)	(c)	(d)	(e)
19.	Seema Yadav 96, Lodhi Mahal Patna-17	Seema Yadav 96, Lodhi Mahal Patna-17	Seema Yadav 46, Lodhi Mahal Patna-17	Seema Yadav 96, Lodhi Mahal Patna-71	Seema Yadav 69, Lodhi Mahal Patna-17	None
20.	Yamal Kumar H. No. 24, MA Rd Bhopal-52	Yamal Kumar H. No. 24 AM Rd Bhopal-52	Yamal Kumari H. No. 24, MA Rd Bhopal-52	Yamal Kumar H. No. 24, MA Rd Bhopal-52	Yamal Kumar H. No. 24, MA Rd Bohpal-25	None
21.	Banwari Meena Room No. 6 N Delhi-110006	Banwari Mina Room No. 6 N Delhi-110006	Banwari Meena H. No. 6 N Delhi-110006	Banwari Meena Room No. 6 N Delhi-100106	Banwari Meena Room No. 6 N Delhi-110006	None

Directions (Q. Nos. 22-27) In each of the following questions, the name of city and date are written along with four options (a), (b), (c) and (d). Among them one is exactly same as the combination given in the question. Find out the appropriate alternative which is exactly same as the question.

		(a)	(b)	(c)	(d)	(e)
22.	Amsterdam 25th August,1864	Amsterdem 25th August, 1864	A,sterda, 25tj Aigist, 1884	Amsterdam 25th August, 1864	Amstardam 25th August, 1864	None
23.	Aroakkonam 2nd Feb, 1534	Aroakkonam 2nd Feb, 1534	Aroakkanam 2nd Feb, 1524	Aroekkanam 2nd Feb, 1524	Aroakonam 2nd Feb, 1534	None
24.	Bangalore Cantonment 8 Dec, 1217	Bangalore Cantonment 8 Dec, 1227	Bangalore Cantonment 8 Dec, 1217	Bangalore Cantonment 8 Dec, 1271	Bangalore Cantonmant 8 Dec, 1217	None
25.	Bhuvaneswar, PO 10th Sep, 1787	Bjivameswer, PO 10th Sep, 1778	Bhuvaneswer, PO 11th Sep, 1787	Bhuvaneswar, PO 10th Sep, 1787	Bhuvaneswer, PO 10th Sep, 1787	None
26.	Fetehpur Sikhri 4th Jun, 1411	Fetehpur Sakhri 4th Jun, 1411	Fetehpur Sekhri 4th Jun, 1411	Fetehpur Sikhri 4th Jan, 1411	Fetehpur Sikhri 4th Jun, 1411	None
27.	Guwahati 14th Jan, 1908	Guwahati 14th Jan, 1098	Guwahati 14th Jan, 1908	Guwhati 14th Jan, 1980	Guwhati 14th Jan, 1908	None

Response & Interpretations **(21.1)**

1. (c) **2.** (d) **3.** (b) **4.** (a) **5.** (a) **6.** (c) **7.** (b) **8.** (a) **9.** (c) **10.** (c)

11. (a) **12.** (b) **13.** (d) **14.** (c) **15.** (c) **16.** (c) **17.** (d) **18.** (b) **19.** (a) **20.** (c)

21. (d) **22.** (c) **23.** (a) **24.** (b) **25.** (c) **26.** (d) **27.** (b)

Type 3 Based on Two Similar Names and Addresses

In this type of questions, four sets of name and address are given out of which two are exactly same. The candidate is required to find out these two combinations and mark the correct answer accordingly.

Direction (Example No. 3) Among the given alternatives, which two addresses are exactly same. Mark the correct answer.

Ex **3** 1. Megha Gupta, K-220, Meerut
2. Megha Gupta, K-120, Meerut
3. Megha Gupta, K-220, Meerut
4. Megha Gupta, L-220, Meerut

(a) 1 and 3 (b) 3 and 4 (c) 4 and 1 (d) 1 and 2

Sol. (*a*) Here, 1 and 3 are exactly same.

Type 4 Based on One Odd Name and Address

In this type of question, four sets of name and address are given, out of which three are exactly same. The candidate is required to find out the one which is odd among them and is not related to the other three.

Direction (Example No. 4) In the following question, four addresses are given. Choose the address which is different from the other three addresses.

Ex **4** (a) Veeru Kumar, C-14, Ambala, City - 44 (b) Veeru Kumar, C-14, Ambala, City - 44
(c) Vikram Singh, C-14, Ambala, Nager-48 (d) Veeru Kumar, C-14, Ambala, City-44

Sol. (c) Option (c) is odd one among the given options and is not related to them in any aspect.

Practice Corner **21.2**

Build your Confidence...

Directions (Q. Nos. 1-9) Among the given alternatives, which two addresses are exactly same. Mark the correct answer.

	(1)	(2)	(3)	(4)
1.	M Ramakrishna 312, Sector 2/IV Ukkunagar Visakhapatnam	M Ramakrishna 312, Sector 2/VI Ukkunagar Visakhapatnam	M Ramakrishna 321, Sector 2/IV Ukkunagar Visakhapatnam	M Ramakrishna 312, Sector 2/IV Ukkunagar Visakhapatnam
	(a) 1 and 4	(b) 1 and 3	(c) 2 and 4	(d) 2 and 3
2.	RJ Vijayan A/1C Byrants 2 Tirupati 57	RJ Vijayan A/C1 Byrants 2 Tirupati 57	RJ Vijayan A/1C Byrants 2 Tirupati 57	RJ Vijayan A/1C Byrants 2 Tirupati 75
	(a) 1 and 2	(b) 1 and 3	(c) 3 and 4	(d) 2 and 3
3.	Rupal Agencies Tel-26853104 Fax-26894132	Rupal Agencies Tel-26853105 Fax-26894132	Rupal Agenceies Tel-26853104 Fax-26894132	Rupal Agencies Tel-26853104 Fax-26894132
	(a) 2 and 4	(b) 1 and 2	(c) 2 and 4	(d) 1and 4
4.	Abdulla Rehman Shaukat Ali St. Alibaug-317259	Abdulla Rehman Shaukat Ali St. Alibaug-312759	Adbulla Rehman Shaukat Ali St. Alibaug-312759	Abdulla Rehman Shaukat Ali St. Alibaug-317259
	(a) 1 and 2	(b) 2 and 3	(c) 3 and 4	(d) 1and 4

	(1)	(2)	(3)	(4)
5.	Azra Travels Call-3984260 Fax-394365	Azra Travels Call-3894260 Pin-394365	Azra Travels Call-3894260 Fax-394365	Azra Travels Call-3894260 Fax-394365
	(a) 1 and 2	(b) 2 and 3	(c) 3 and 4	(d) 1 and 4
6.	Azumi Jaan Ontinent Cargo Purkut-31394	Azumi Jaan Ontinent Cargo Burkut-31394	Azumi Jaan Ontinent Cargo Burkut-31394	Auzmi Jaan Ontinent Cargo Burkut-31394
	(a) 1 and 2	(b) 2 and 3	(c) 3 and 4	(d) 2 and 4
7.	Barbosa Salon CM Metha St Cuff Parade-95	Barbosa Salon CM Metha St Cuff Parode-95	Barbosa Salon CM Metha St Cuff Parade-95	Barbosa Salon CM Metha St Cuff Parade-59
	(a) 1 and 2	(b) 2 and 3	(c) 3 and 4	(d) 1and 3
8.	Chabildas Zanja Keval Wadi-3 Satara-48	Chabildas Zanga Keval Wadi-3 Satara-48	Chabildas Zanja Keval Wadi-3 Satara-48	Chabildas Zanja Keval Vadi-3 Satara-48
	(a) 1 and 2	(b) 1 and 3	(c) 1 and 4	(d) 2 and 4
9.	Deepal Shaw 11/16, Link Road Chandigarh-64	Deepal Shaw 11/16, Link Road Chandigarh-46	Depeal Shaw 11/16, Link Road Chandigarh-46	Deepal Shaw 11/16, Link Road Chandigarh-46
	(a) 1 and 2	(b) 2 and 3	(c) 3 and 4	(d) 2and 4

Directions (Q. Nos. 10-17) In each of the following questions, four addresses are given. Choose the address which is different from the other three addresses.

	(a)	(b)	(c)	(d)
10.	Reinhal Mesmer Country Beverages Call-7393525	Reinhal Mesmer Country Beverages Call-7395325	Reinhal Mesmer Country Beverages Call -7393525	Reinhal Mesmer Country Beverages Call-7393525
11.	Morgam Photos JVPD Scheme Sahar-403916	Morgan Photos JVPD Scheme Sahar-403916	Morgan Photos JVPD Scheme Sahar-403916	Morgan Photos JVPD Scheme Sahar-403916
12.	Hussain Shaikh Kapadia Nagar Mumbai-400093	Hussain Shaikh Kapadia Nagar Mumbai-400093	Hussain Shaikh Cepadia Nagar Mumbai-400093	Hussain Shaikh Kapadia Nagar Mumbai-400093
13.	Vishal Rathor W 15, H16 Ph. V Bhubaneswar4	Vishal Rathor W 15, H16 Ph. V Bhubaneswar 4	Vishal Rathor W15, H 16 Ph. V Bhubaneswar 4	Vishal Rathor W15, H16 Ph. IV Bhuvaneswar 4
14.	Aman Kumar Hatri Sr. Mngr. Textile Mob. -9821334065	Aman Kumar Hatri Sr. Mngr. Textile Mob. -9821334056	Aman Kumar Hatri Sr. Mngr. Textile Mob. -9821334065	Aman Kumar Hatri Sr. Mngr. Textile Mob. -9821334065
15.	Rajneesh S. Jose 127, Shivaji Nagar Nashik-425976	Rajnish S. Jose 127, Shivaji Nagar Nashik-425976	Rajneesh S. Jose 127, Shivaji Nagar Nashik-425976	Rajneesh S. Jose 127, Shivaji Nagar Nashik-425976
16.	Lacelle Gibbons Florida Travels Mob. 9689231542	Lacelle Gibbons Florida Travels Mob. -9689231542	Lacelle Gibbons Florida travels Mob. -9689231542	Lacelle Gibbons Floreda Travels Mob. -9689231542
17.	Aanchal Sarees G. M. Mehta Marg Ghatkopar (East)	Aanchal Sarees G. M. Mehta Marg Ghatkopar (East)	Aanchal Sarees G. M. Metha Marg Ghatkopar (West)	Aanchal Sarees G. M. Mehta Marg Ghatkopar (East)

Response & Interpretations **(21.2)**

1. (a) **2.** (b) **3.** (d) **4.** (d) **5.** (c) **6.** (b) **7.** (d) **8.** (b) **9.** (d) **10.** (b)
11. (a) **12.** (c) **13.** (d) **14.** (b) **15.** (b) **16.** (d) **17.** (c)

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-8) In each of the following questions, a combination of name and address is given in the first unnumbered column at the left, followed by four such combinations, one each under the column (a), (b), (c) and (d). You have to find out the combination which is exactly the same as the combination in the first unnumbered column. The number of that column which contains that correct combination is the answer.

		(a)	(b)	(c)	(d)
1.	**Miss Sutha Laxmi 17, Ashwathakgatti Road, Visweshwarapuram,Bangalore-560004**	Miss Sutha Laxmi 17, Ashwathakgatti Road, Visweshwarapurram, Bangalore-560004	Miss Sutha Laxmi 17, Ashwathakgatti Road, Visweshwarapuram, Bangalore-560004	Miss Sutha Laxmi 17, Ashwathakgati Road, Visweshwarapuram, Bangalore-560004	Miss Sutha Laxmi 71, Ashwathakgatti Road, Visweshwarapuram, Bangalore-560004
2.	**Mumbai Pharmaceuticals, 31/13 Napian sea, Mumbia-400006**	Mumbai Pharmaceuticals, 31/13 Napian sea, Mumbia-400006	Mumbai Pharmaceuticals, 31/13 Napianr sea, Munbia-400006	Mumbai Pharmaceuticals, 31/23 Napian sea, Mumbia-400006	Mumbai Pharmaceuticals, 13/13 Napian sea, Mumbia-400006
3.	**Navin Patnayak 'Navin Niwas' (Biju Smriti) KM Patnayak Marg Bhubneswar-322005**	Navin Patnayak 'Navin Niwas (Beeju Smriti) KM Patnayak Marg Bhubneswar-322005	Navin Patnayak 'Navin Niwas' (Biju Smriti) KM Patnayak Marg Bhubneswar-320005	Navin Patnayak 'Naveen Niwas' (Biju Smriti) KM Patnayak Marg Bhubneswar-322005	Navin Patnayak 'Navin Niwas' (Biju Smriti) KM Patnayak Marg Bhubneswar-322005
4.	**Om Kumar Varma 32, Tilak Nagar Honolulu, Hawai**	Om Kumar Varma 32, Tilak Nagar Honolulu, Hawai	Om Kumar Vearma 32, Tilak Nagar Honolulu, Hawai	Om Kumar Varma 23, Tilak Nagar Honolulu, Hawai	Om Komar Varma 32, Tilak Nagar Honolulu, Hawai
5.	**PK Balasubramanian 13/150, MHB Flats, Agharkernagar, Pune-411010**	PK Balasubramanian 13/150, MNB Flats, Agharkernagar, Pune-411010	PK Balasubramaniam 13/150, MHB Flats, Agharkernagar, Pune-411010	PK Balasubramanian 13/150, MMB. Flats, Agharkernagar, Pune-4110	PK Balasubramanian 13/150, MHB Flats, Agharkernagar, Pune-411010
6.	**PSS Thamariakani 14, Cudalore Road Panruti-628001**	PSS Thamariakani 14, Cuddalore Road Panruti-628001	PSS Thamariakani 14, Cudalore Road Panruti-628010	PSS Thamariakani 14, Cudalore Road Panruti-628001	PSC Thamariakani 14, Cudalore Road Panruti-628001
7.	**Puneet Singh Jagta Raja Ki Mandi New Bhadana Road Ujjain-400625**	Puneet Singh Jagta Raja Ki Mandi New Bhadana Road Ujjain-400625	Puneet Singh Jagta Raja Ke Mandi New Bhadana Road Ujjain-400625	Puneet Singh Jagtaa Rajaki Mandi New Bhadana Road Ujjain-400625	Puneet Singh Jagta Raja Ki Mandi New Bhudana Road Ujjain-400625 **[SSC (FCI) 2012]**
8.	**Sristidhar Kashyap S/o Supravakar Kashyap Near Nalla Beach, 11-Kalapet Puducherry-605014**	Sristidhar Kashyap S/o Supravakar Kasyap Near Nalla Beach, 11-Kalapet Puducherry-605014	Sristidhar Kashyap S/o Supravakar Kashyap Near Nalla Beach, 11-Kalapet puducherry-605014	Sristidhar Kashyp S/o Supravakar Kashyp Near Nall Beach, 11-Kalpet Puducherry-605014	Sristidhar Kashyp S/o Supravakar Kashyp Near Nail Beach, 11-Kalapet Puducherry-605014 **[SSC (FCI) 2012]**

Directions (Q. Nos. 9-19) In each of the questions given below, a combination of Name and Address is given in the first unnumbered column at the left, followed by four such combinations one each under the column (a), (b), (c) and (d). You have to find out the combination which is exactly the same as the combination in the first unnumbered column. The number of that column which contains that combination is the answer. If all the combinations are different, then the answer is (e).

		(a)	(b)	(c)	(d)	(e)
9.	AK Vashishth 203, Tanya Height Noida-04	AK Vashishth 302, Tanya Height Noida-04	AK Vashishth 203, Tanya Height Noida-04	AK Vashishtha 203, Tanya Height Noida-04	AK Vashishth 203, Tanya Hight Noida-04	None
10.	Minshuk Cha Kenche's Trace 523 Shillong-468	Minshuk Cha Kenche's Trace 523 Shillong-458	Minshuk Cha Kenche's Tranc 523 Shillong-468	Minshuk Cha Kenche's Trace 523 Shillong-488	Minshuk Cha Kenche's Trace 523 Shillong-468	None
11.	V M Gopalan Charkhi Dadri-W Bhiwani-406921	V M Gopalan Charkhi Dadri-E Bhiwani-406921	V M Gopalan Charkhi Dadri-W Bhiwani-406921	M V Gopalan Charkhi Dadri-W Bhiwani-406921	V M Gopal Charkhi Dadri-W Bhiwani-406921	None
12.	M/s. Shah Store C-14/160-34 Ambala City-14	M/s. Shah Store C-14/160-34 Ambala City-14	M/s. Shah Store C-16/160-34 Ambala City-14	M/s. Shah Store C-14/160-24 Ambala City-14	M/s. Shah Store C-14/160-34 Ambala Cant-14	None
13.	Shyam Mathur 101, Naya Sarafa Kota (West)-14	Shyam Mathur 101, Naya Sarrafa Kota (West)-14	Shyam Mathur 101, Naya Sarafa Kota (West)-41	Shyama Mathur 101, Naya Sarafa Kota (West)-14	Shyam Mathur 101, Naya Sarafa Kota (East)-14	None
14.	Radhika Kapur Qr. 1, Street 428 Mohali-12569	Radhika Kapur Qr. 1, Road 428 Mohali-12569	Radhika Kapur Qr. 1, Street 428 Mohali-12596	Radhika Kapur Qr. 1, Street 428 Mohali-12569	Radhika Kapoor Qr. 1, Street 428 Mohali-12569	None
15.	Prakash Bairwa 28/16 D, Sikar Erode-406925	Prakash Bairwa 28/16 D, Sikar Erode-406925	Prakash Berwa 28/16 D, Sikar Erode-406925	Prakash Bairwa 28/16 D, Sikar Erode-409625	Prakash Bairwa 28/19 D, Sikar Erode-406925	None
16.	Amar J Dhar 4 Acropolis Road Bhilai-493268	Amar J Dhar 4 Acropolis Marg Bhilai-493268	Amar J Dhar 4 Acropolis Road Bhilai-493628	Amar J Dhar 5 Acropolis Road Bhilai-493268	Amar J Dhar 4 Acropolis Road Bhilai-493268	None
17.	Suraj Shri Kumar WZ-9, HIG-10 Rewa-823058	Suraj Shri Kumar WZ-6, HIG-10 Rewa-823058	Suraj Sri Kumar WZ-9, HIG-10 Rewa-823058	Suraj Shri Kumar WZ-9, HIG-01 Rewa-823058	Suraj Shri Kumar WZ-9, HIG-10 Rewa-823508	None
18.	MJK Allam 8, Khurshid Bagh 4 Bhopal 024	MJK Allam 8, Khurhsid Park Bhopal 024	MJK Allam 8, Khurshid Bagh 4 Bhopal 024	MJK Allam 8, Khurhsid Bagh 4 Bhopal 024	MJK Allam 8, Khurshid Bagh 4 Bhopal 042	None
19.	Vikas Shetty Raheja Tower IV Borivli (W) 09	Vikas Shetty Raheja Towar IV Borivli (W) 09	Vikas Shetty Raheja Tower IV Borivali (W) 09	Vikas Shette Raheja Tower IV Borivli (W) 09	Vikas Shetty Raheja Tower IV Borivli (W) 09	None

Directions (Q. Nos. 20-25) In each of the following questions, the name of city and date are written along with four options (a), (b), (c) and (d). Among them one is exactly same as the combination given in the question. Find out the appropriate alternative which is exactly same as the question.

		(a)	(b)	(c)	(d)	(e)
20.	Kozhencherry 17th August 1786	Kozhencherry 17th August 1786	Kozhancherry 17th August 1786	Kozhencherry 17th August 1768	Kozhenchery 17th August 1786	None
21.	Lakshmanpur, February 3,1947	Lakshmanpur, February 3,1947	Lakshmampur, February 3,1947	Lakshmampur, Februoary 3,1947	Lakshmanpur, February 3,1937	None

		(a)	(b)	(c)	(d)	(e)
22.	Orbassaneo 19th April 1953	Orbassanao 19th April 1953	Orbassaneo 19th April 1935	Orbessaneo 19th April 1953	Orbassaneo 19th April 1953	None
23.	Ottakalmandabam 22nd September, 1698	Ottakalmandalam 22nd September, 1698	Ottakalmandabam 22nd Septamber, 1698	Ottakalmandabam 22nd September, 1689	Ottakalmandabam 22nd September, 1698	None
24.	Rupnarainpur 27th, Dec, 1956	Rupnarainpur 27th, Decem, 1956	Rupnarainpur 27th, Dec, 1965	Rupnerainpur 27th, Dec, 1956	Rupnarainpur 27th, Dec, 1956	None
25.	Udayarpalayam 26th February, 1979	Udayarpalayam 26th February, 1799	Udayarpalayam 26th February, 1979	Udayarpalayam 26th February, 1997	Udayarpalayem 26th February, 1979	None

Directions (Q. Nos. 26-31) Among the given alternatives which two addresses are exactly same. Mark the correct answer.

	(1)	(2)	(3)	(4)
26.	Gimini Holidays Grant Central Club Ph.-7451396	Gemini Holidays Grant Cantral Club Ph.-7451396	Gemini Holidays Grant Central Club Ph.-7451396	Gemini Holidays Grant Central Club Ph.-7451396
	(a) 1 and 2	(b) 2 and 3	(c) 3 and 4	(d) 1and 4
27.	Hinayat Hora opp. Daras Road Varun Park-II	Himayat Hora opp. Daras Road Varun Park -II	Himayat Hora opp. Doras Road Varun Park -II	Himayat Hora opp. Daras Road Varun Park -II
	(a) 1 and 2	(b) 1 and 3	(c) 1 and 4	(d) 2and 4
28.	Khemka Yuki Kohram Pada Janakpur-38	Khemka Yuki Kohram Pada Janakpur-38	Khemka Yuki Kohram Pada Jamakpur-38	Khimka Yuki Kohram Pada Janakpur-38
	(a) 1 and 2	(b) 2 and 3	(c) 1 and 4	(d) 2and 4
29.	Kondar Studio Vallabhai Road Call-41329065	Konda Studio Vallahbai Road Call-41320965	Konda Studio Vallabhai Road Call-41329065	Konda Studio Vallabhai Road Call-41329065
	(a) 1 and 2	(b) 2 and 3	(c) 3 and 4	(d) 2and 4
30.	Shweta Maruru Plat A-Sector 12 Marol Naka-36	Shweta Maruru Plat A-Sector 12 Maral Naka-36	Shweta Maruru Plat A-Sector 12 Marol Naka-39	Shweta Maruru Plat A-Sector 12 Marol Naka-36
	(a) 1 and 2	(b) 1 and 3	(c) 1 and 4	(d) 2and 4
31.	Sukesh Chand 632, Mansa Road Gwalior-176408	Sukesh Chand 632, Mansa Road Gwalior-176408	Sukesh Chamd 632, Mansa Road Gwalior-176408	Sukesh Chand 632, Mansa Road Gwaleor-176408
	(a) 1 and 2	(b) 1 and 4	(c) 1 and 3	(d) 3and 4

Directions (Q. Nos. 32-33) In the following questions four addresses are given. Choose the address which is different from the other three addresses.

	(a)	(b)	(c)	(d)
32.	Cindrella Toys Lee Magamrt Ph. -46389271	Cindrella Toys Lee Magamart ph. -46389271	Cindrella Toys Lee Magamart Ph. -46389271	Cindrella Toys Lee Magamart Ph. -46389271
33.	Jahangir Traders Gajar Street No. 47 Hamirpur-58	Jahangir Traders Gajar Street No. 47 Hamirpur -58	Jahangir Traders Gangar Street No. 47 Hamirpur 58	Jahangir Traders Gajar Street No. 47 Hamirpur-58

Response & Interpretations (Master Exercise)

1. (b)	**2.** (a)	**3.** (d)	**4.** (a)	**5.** (d)	**6.** (c)	**7.** (a)	**8.** (b)	**9.** (b)	**10.** (d)
11. (b)	**12.** (a)	**13.** (e)	**14.** (c)	**15.** (a)	**16.** (d)	**17.** (e)	**18.** (b)	**19.** (d)	**20.** (a)
21. (a)	**22.** (d)	**23.** (d)	**24.** (d)	**25.** (b)	**26.** (c)	**27.** (d)	**28.** (a)	**29.** (c)	**30.** (c)
31. (a)	**32.** (a)	**33.** (c)							

NON-VERBAL

1

Completion of Series

A series is described as a sequential arrangement of figures following a certain pattern of transition from one to other.

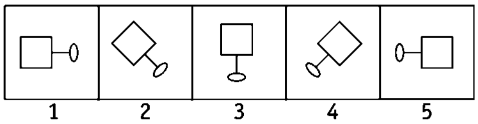
Different types of questions covered in this chapter are as follows

- Choosing the Next Term in the Series
- Choosing the Missing Figure in the Series
- Detection of Incorrect Order in the Series
- Detecting the Wrong Figure in the Series

In the questions based on this chapter, a series of figures is given as problem figures and the candidate is required to select one figure from the given set of answer figures which will continue the given sequence. A series of figures is formed when each of the consecutive figures of the series is obtained from the previous figure by following a certain pattern like clockwise or anti-clockwise rotation, movement of symbols inside the figure, addition or deletion of designs, replacement or rearrangement of designs etc.

In some type of questions based on series, first figure is rotated by a certain angle either in clockwise or anti-clockwise direction to obtain the second figure. Similarly, second figure rotates either by same angle or some different angle in a particular pattern to obtain the third figure and so on.

Let us consider the following series of figures



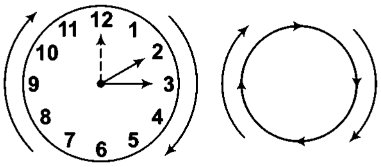
In the above series, each of the consecutive figure is obtained by rotating the previous figure by 45° in clockwise direction.

In order to solve these questions students must have a clear vision of the concepts like rotation, angles, steps of movement, etc., as these concepts are utilised for identifying the correct answer figure that will complete the given series of figures.

Concept of Rotation

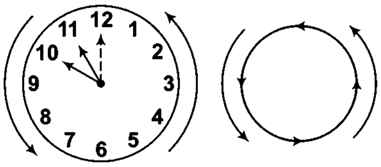
The movement of a block (figure) around a fixed point is known as rotation. The simplest example of rotation is the movement of hour and minute hand of the clock. Such movements are of two types.

1. **Clockwise Rotation** When a figure rotates in the direction of the hands of a clock, then this movement is called clockwise movement. This can be better understood with the help of direction of arrows.



Clockwise rotation

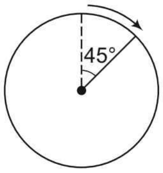
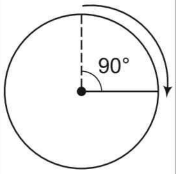
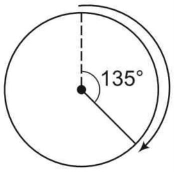
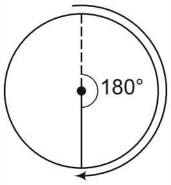
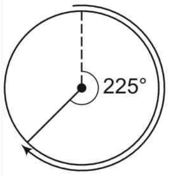
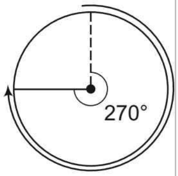
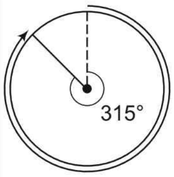
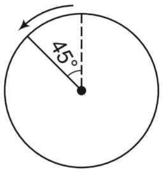
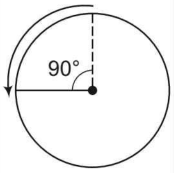
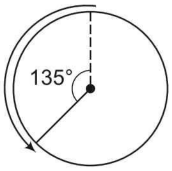
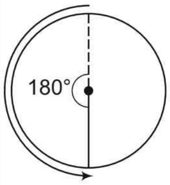
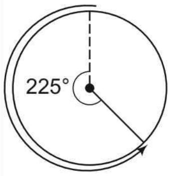
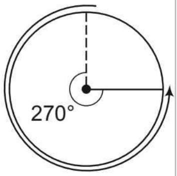
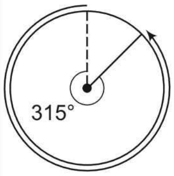
2. **Anti-clockwise Rotation** When a figure rotates in the opposite direction of the hands of a clock, then this movement is known as anti-clockwise movement. This can be better understood with the help of direction of arrows.



Anti-clockwise rotation

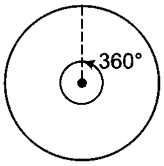
Concept of Angles

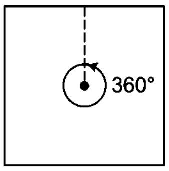
The figures are rotated either clockwise or anti-clockwise by a certain angle. The concept of angles can be better understood with the help of following figure where the dotted line shows the original/initial position, dark line shows the final position and the direction arrow shows the direction of rotation.

Angle	45°	90°	135°	180°	225°	270°	315°
Clockwise rotaion							
Anti-clockwise rotaion							

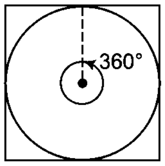
Concept of Angle in a Square

The same concept of angles which is explained above is also valid for square figure as both the figures (*i.e.,* circle and square) form an angle of 360° with the centre as shown below.





Now, let us combine these two figures to have a more clear picture of the concept.



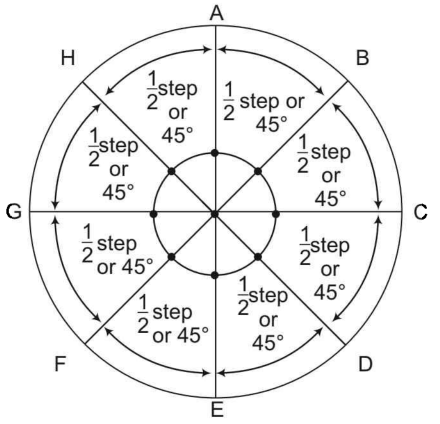
So, from the above figures it is clear that the clockwise and anti-clockwise angular rotations that takes place in a square block are similar to the above explained rotations.

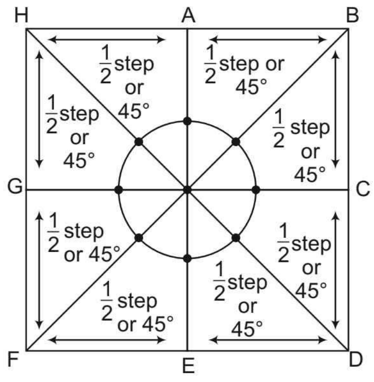
Concept of Steps

In some type of questions based on series, the whole figure is not rotated to obtain the another figure but one or more elements/symbols inside the figure move some steps in an orderly manner to obtain the subsequent figures. So, it is required to have a clear understanding about the concept of steps.

As we have already understood the concept of angles, we can extend the concept of angles to explain the concept of steps.

Let us consider the following two figures


A
B
C
D
E
F
G
H
1/2 step or 45°
1/2 step or 45°
1/2 step or 45°
1/2 step or 45°
1/2 step or 45°
1/2 step or 45°
1/2 step or 45°
1/2 step or 45°


H
A
B
C
D
E
F
G
1/2 step or 45°
1/2 step or 45°
1/2 step or 45°
1/2 step or 45°
1/2 step or 45°
1/2 step or 45°
1/2 step or 45°
1/2 step or 45°

From the above figures it is very much clear that the length of arc or side corresponding to 45° is taken as half step.

So, $\frac{1}{2}$ step = 45°

Now, we can calculate some more steps as given below

$\left(\frac{1}{2}+\frac{1}{2}\right)$ step $= 45° + 45° \Rightarrow$ 1 step $= 90°$

$\left(1+\frac{1}{2}\right)$ step $= 90° + 45° \Rightarrow 1\frac{1}{2}$ step $= 135°$

$\left(1\frac{1}{2}+\frac{1}{2}\right)$ step $= 135° + 45° \Rightarrow$ 2 step $= 180°$

$\left(2+\frac{1}{2}\right)$ step $= 180° + 45° \Rightarrow 2\frac{1}{2}$ step $= 225°$

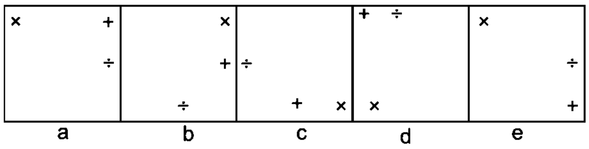
$\left(2\frac{1}{2}+\frac{1}{2}\right)$ step $= 225° + 45° \Rightarrow$ 3 step $= 270°$

$\left(3+\frac{1}{2}\right)$ step $= 270° + 45° \Rightarrow 3\frac{1}{2}$ step $= 315°$

$\left(3\frac{1}{2}+\frac{1}{2}\right)$ step $= 315° + 45° \Rightarrow$ 4 step $= 360°$

These steps can be better understood with the help of following example.

Let us consider the following series of figures



In the above series, the symbols/elements '×' and '÷' move one step clockwise in the each subsequent figure while the symbol '+' moves $\frac{1}{2}$, 1, $1\frac{1}{2}$ and 2 steps clockwise in each subsequent figure.

Patterns Involved in Series Formation

When the given figures follow a certain pattern or rule such that one figure can be obtained from another figure by applying certain changes, then these figures form a series. There are several patterns followed by the figures, based on which a series can be formed

The most commonly applied patterns for the formation of a series are as follows

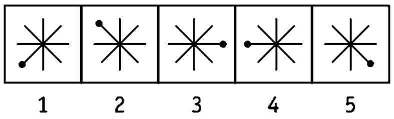
1. Clockwise or Anti-clockwise Rotation of Designs

In this type of questions, each preceding figure in the series is rotated at a certain angle either in clockwise or anti-clockwise direction to obtain the subsequent figures. This rotation of figures can be done either by same angle or by some different angles in an orderly manner.

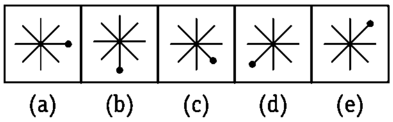
The concept of rotation of design can be better understood with the help of following examples

Directions (Example Nos. 1-4) In each of the following questions, a group of five figures following a certain sequence is given as problem figures. Problem figures are followed by another group of five figures known as answer figures marked as (a), (b), (c), (d) and (e). Find out the figure from the answer figures which when placed next to the problem figures will continue the sequence of problem figures.

***Ex* 1** **Problem Figures**

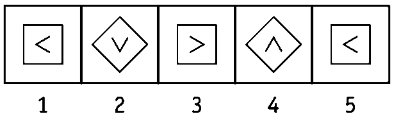


Answer Figures

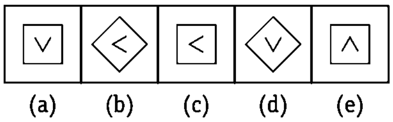


Sol. (*e*) It is clear from the pattern of series that the figure rotates 90°, 135°, 180°, 225° and finally 270°, respectively in the clockwise direction.

***Ex* 2** **Problem Figures**

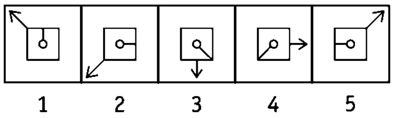


Answer Figures

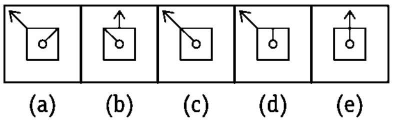


Sol. (*d*) It is clear from the pattern of series that the outer figure rotates through an angle of 45° in each subsequent block whereas the inner figure rotates through an angle of 90° in anti-clockwise direction in each subsequent block.

***Ex* 3** **Problem Figures**

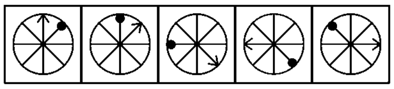


Answer Figures



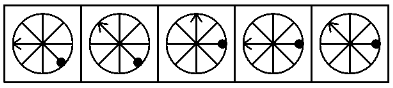
Sol. (*d*) It is clear from the above figure that arrow rotates through an angle of 90° and 45° anti-clockwise alternatively and inner pin rotates through an angle of 90° and 45° clockwise in alternate blocks.

Ex **4** **Problem Figures**



1 2 3 4 5

Answer Figures



(a) (b) (c) (d) (e)

Sol. (*e*) It is clear from the above figure that the arrow rotates clockwise making an angle of 45°, 90°, 135° and 180° in each subsequent block and the dot rotates in the same way but in anti-clockwise direction. Thus, the arrow and dot will rotate by an angle of 225° clockwise and anti-clockwise, respectively in the answer figure.

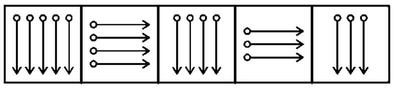
2. Addition and Deletion of Designs

In this type of questions, each subsequent figure of the series is obtained by addition and /or deletion of designs in the preceeding figures. Sometimes this addition and/ or deletion of designs can happen along with rotation of figures.

Following examples will give a better understanding about this concept

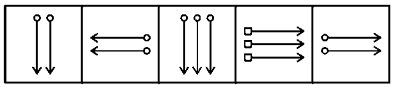
Directions (Example Nos. 5-8) In each of the following questions, a group of five figures following a certain sequence is given as problem figures.Problem figures are followed by another group of five figures known as answer figures marked as (a), (b), (c), (d) and (e). Find out the figure from the answer figures which when placed next to the problem figures will continue the sequence of problem figures.

Ex **5** **Problem Figures**



1 2 3 4 5

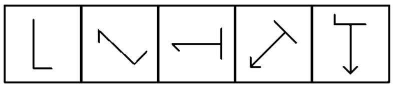
Answer Figures



(a) (b) (c) (d) (e)

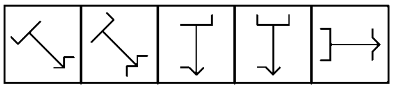
Sol. (*e*) It is clear from above that the figures rotate anti-clockwise and clockwise making an angle of 90° alternatively and one element is deleted in every alternate block.

Ex **6** **Problem Figures**



1 2 3 4 5

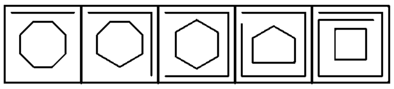
Answer Figures



(a) (b) (c) (d) (e)

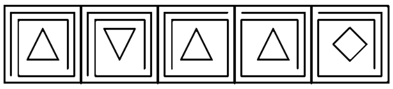
Sol. (*a*) It is clear from the above figure that the figure rotates 45° anti-clockwise in each block and one line is added to its top and bottom alternatively.

Ex **7** **Problem Figures**



1 2 3 4 5

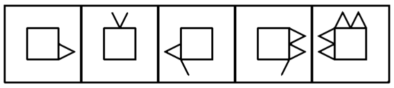
Answer Figures



(a) (b) (c) (d) (e)

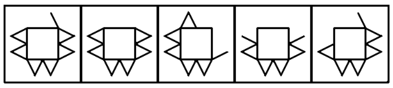
Sol. (*d*) The number of sides in the outer figure is increased by one and number of sides in the inner figure is decreased by one side successively in each block.

Ex **8** **Problem Figures**



1 2 3 4 5

Answer Figures



(a) (b) (c) (d) (e)

Sol. (*b*) In each subsequent figure, 0, 1, 2, 3,...lines are added alternatively in anti-clockwise and clockwise directions.

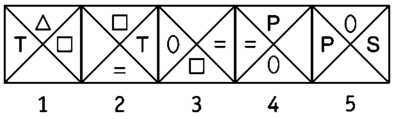
3. Replacement and Rearrangement of Design

In this type of questions, each subsequent figure of the series is obtained when the designs inside the figures are replaced by new designs or the position of the designs are rearranged with some modification or alteration. Sometimes this replacement and/or rearrangement of designs can also take place along with rotation and addition/ deletion of the design.

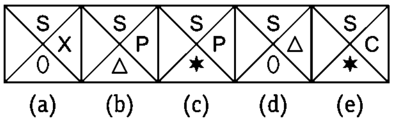
Following examples will give a better understanding about this concept

Directions (Example Nos. 9-11) In each of the following questions, a group of five figures following a certain sequence is given as problem figures.Problem figures are followed by another group of five figures answers figures marked as (a), (b), (c), (d) and (e). Find out the figure from the answer figures which when placed next to the problem figures will continue the sequence of problem figures.

***Ex* 9 Problem Figures**

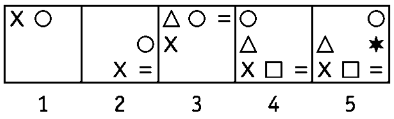


Answer Figures

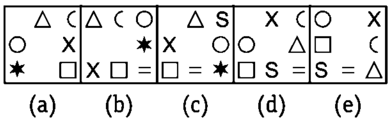


Sol. (c) Problem figure (1) is identical to figure (5) but with different symbols. Problem figure (2) is obtained by moving □ to the top, T to the opposite side and Δ to the bottom (replacing by =). Similarly, answer figure will be obtained from problem figure (5) by moving symbol S to the top, P to the opposite side and 0 to the bottom (replacing by ✶). Figure (b) cannot be the correct answer as symbol Δ is not a new symbol.

***Ex* 10 Problem Figures**

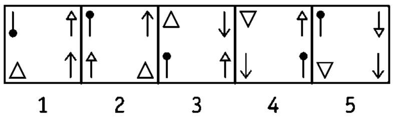


Answer Figures

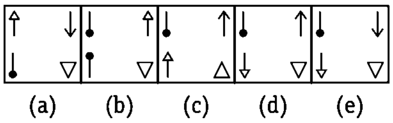


Sol. (c) Symbols of each block of problem figures are moving clockwise in such a way that first symbol moves one side and is immediately preceded by new symbol in subsequent block and the second symbol moves $2\frac{1}{2}$, 3, 4 and $4\frac{1}{2}$ sides in subsequent blocks. Hence, first symbol (Δ) of problem figure (5) will move one side and will be preceded by new symbol, second symbol (X) will move $4\frac{1}{2}$ side.

***Ex* 11 Problem Figures**



Answer Figures



Sol. (e) Symbols of first block move in such a way that figure at the top right position is moved diagonally opposite, symbol at bottom right is moved at top right position, symbol at left bottom position is shifted to bottom right and figure at the left top position is reversed at the same place. The method is same from problem figure (3) to (4) and hence, it will be same from problem figure (5) to answer figure.

Various types of problems are asked from this chapter, are as follows

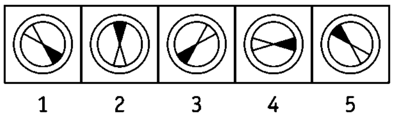
Type 1 Choosing the Next Term in the Series

In this type of questions, a series of figures in given which follows a certain pattern/rule of transition or change between the successive figures. The series of figures is termed as problem figures and is followed by another set of figures known as answer figures. Candidates are required to select one figure from the answer figures which when placed next to the last problem figures, will continue the series following the same pattern/rule as used in the problem figure series.

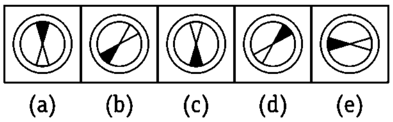
This type of questions are explained in the following examples

Directions (Example Nos. 12-15) Each of the following questions consists of five problem figures marked 1, 2, 3, 4 and 5 followed by five answer figures (a), (b), (c), (d) and (e). Find out the figure from the answer figures which will continue the given series.

***Ex* 12 Problem Figures**

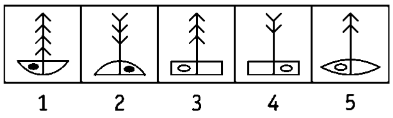


Answer Figures

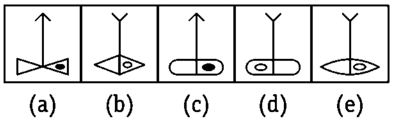


Sol. (*c*) The inner figure is rotating and making an angle of 135° anti-clockwise in each subsequent block.

***Ex* 13 Problem Figures**

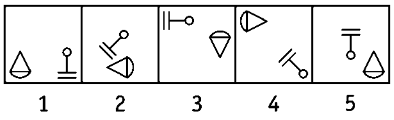


Answer Figures

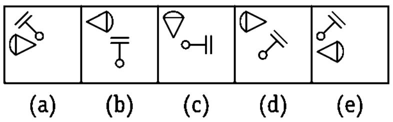


Sol. (*e*) Here, deletion of design in the figure takes place with the change in the figures. An arrow is deleted in each alternate block with the re-reversal in design. Similarly, base is also reversed with alternate shifting of shaded portion.

***Ex* 14 Problem Figures**

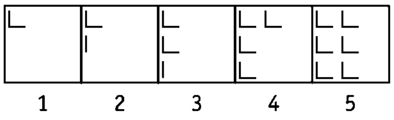


Answer Figures

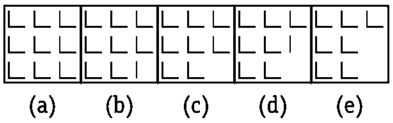


Sol. (*e*) Figure △ moves $\frac{1}{2}$, 1, $1\frac{1}{2}$ and 2 sides in anti-clockwise direction making an angle of 90° anti-clockwise and figure makes an angle of 45° in clockwise direction and shifts to middle, top and bottom positions in straight line.

***Ex* 15 Problem Figures**



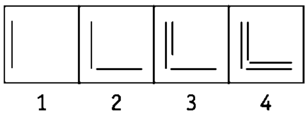
Answer Figures



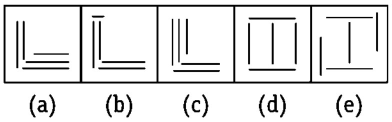
Sol. (*b*) In every successive figure, there is an addition of 1, 2, 3, 4, 5,... lines, respectively.

Directions (Example Nos. 16-17) Each of the questions consists of four problem figures and five answer figures marked (a), (b), (c), (d) and (e). Select a figure from the answer figures which will continue the series established by the four problem figures.

***Ex* 16 Problem Figures**

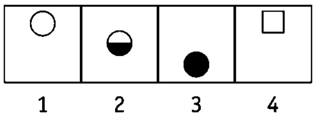


Answer Figures

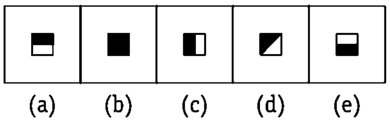


Sol. (c) Vertical and horizontal line segments are added to the figure alternately.

***Ex* 17 Problem Figures**



Answer Figures



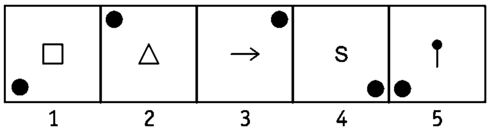
Sol. (e) In the first step, the lower half of the white figure gets shaded; in the second step, the complete figure gets shaded and in the third step, the figure gets replaced by a new white figure. The three steps are repeated to continue the series.

Practice Corner **1.1**

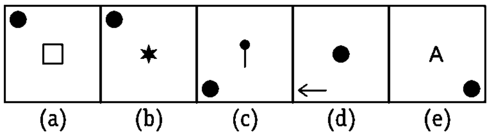
Build your Confidence...

Directions (Q. Nos. 1-44) Each of the questions consists of five figures marked 1, 2, 3, 4 and 5 named as the problem figures and is followed by five answer figures marked (a), (b), (c), (d) and (e). Select a figure from the answer figures which will continue the series as established by the five problem figures.

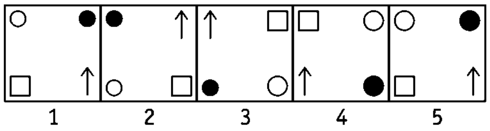
1. Problem Figures



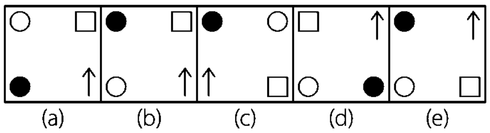
Answer Figures



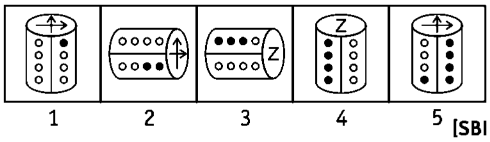
2. Problem Figures



Answer Figures

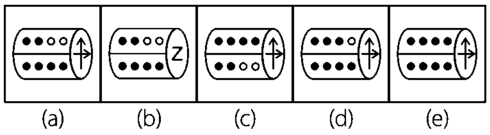


3. Problem Figures

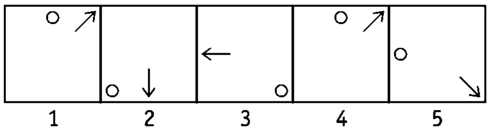


[SBI (Clerk) 2012]

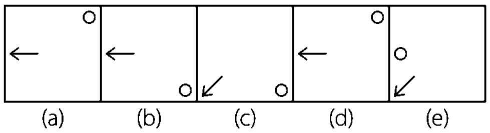
Answer Figures



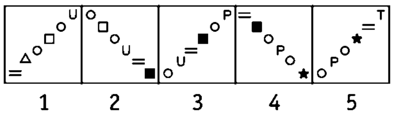
4. Problem Figures



Answer Figures

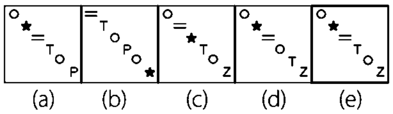


5. Problem Figures

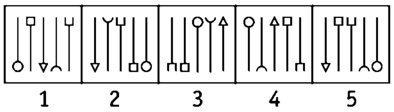


[BOB (PO) 2011]

Answer Figures

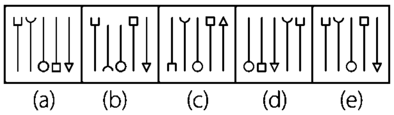


6. Problem Figures

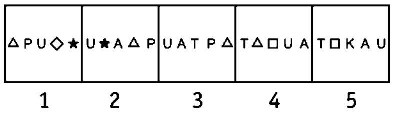


[BOB (PO) 2011]

Answer Figures

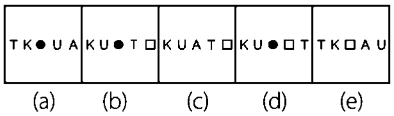


7. Problem Figures

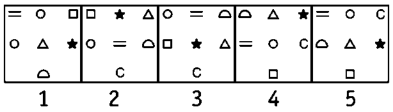

△ P U ◇ ★
U ★ A △ P
U A T P △
T △ □ U A
T □ K A U
1
2
3
4
5

[BOB (PO) 2011]

Answer Figures

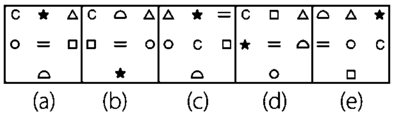

T K ● U A
K U ● T □
K U A T □
K U ● □ T
T K □ A U
(a)
(b)
(c)
(d)
(e)

8. Problem Figures

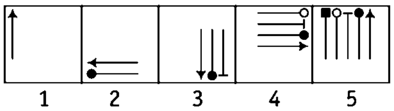


[Rajasthan Grameen Bank (PO) 2011]

Answer Figures

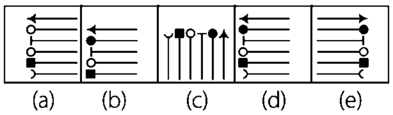


9. Problem Figures

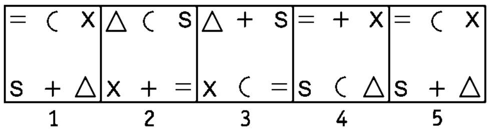


[Rajasthan Grameen Bank (PO) 2011]

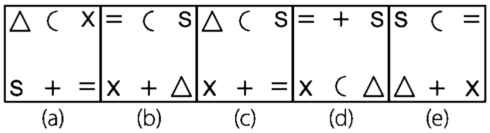
Answer Figures



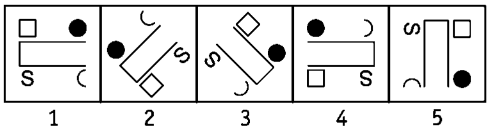
10. Problem Figures



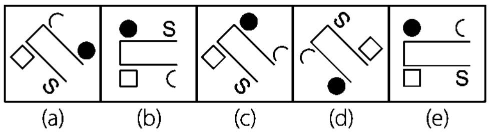
Answer Figures



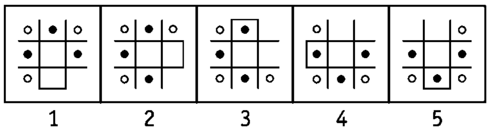
11. Problem Figures



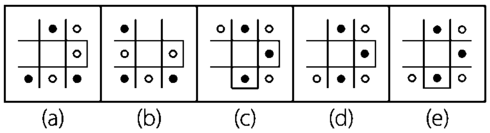
Answer Figures



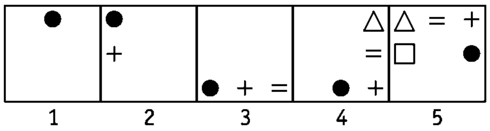
12. Problem Figures



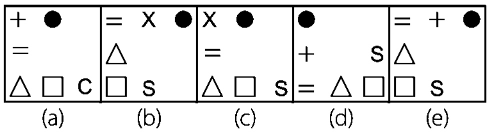
Answer Figures



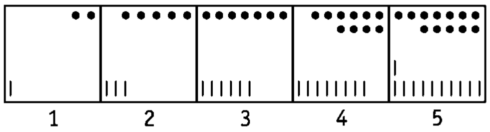
13. Problem Figures



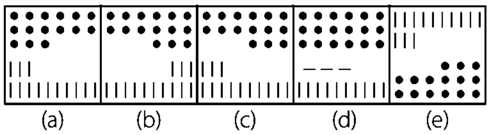
Answer Figures



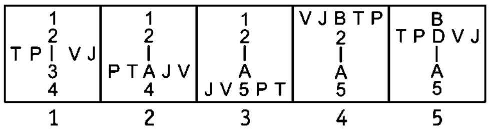
14. Problem Figures



Answer Figures

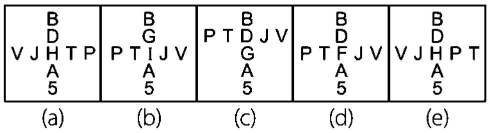


15. Problem Figures

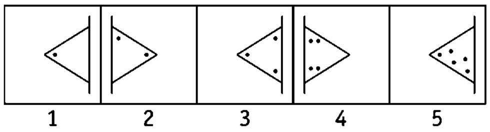

1 2 T P V J 3 4
1 2 P T A J V 4
1 2 A J V 5 P T
V J B T P 2 A 5
B T P D V J A 5
1
2
3
4
5

[SBI (Clerk) 2012]

Answer Figures

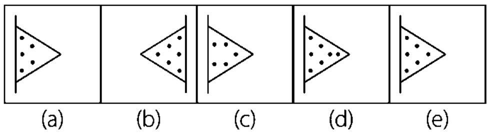

B D V J H T P A 5
B G P T I J V A 5
B P T D J V G A 5
B D P T F J V A 5
B D V J H P T A 5
(a)
(b)
(c)
(d)
(e)

16. Problem Figures

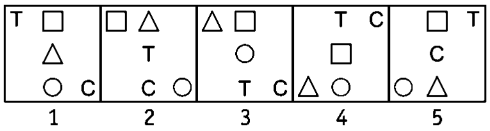


[Corporation Bank (PO) 2011]

Answer Figures

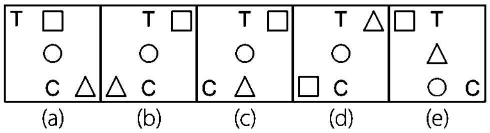


17. Problem Figures

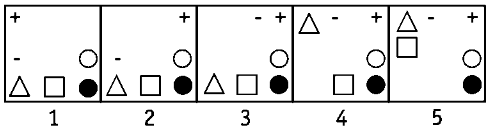


[Allahabad Bank (PO) 2011]

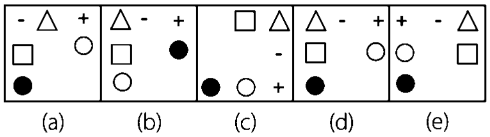
Answer Figures



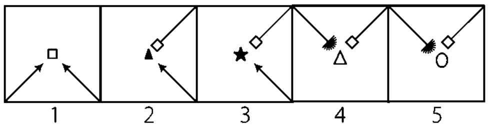
18. Problem Figures



Answer Figures

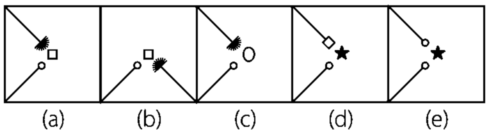


19. Problem Figures

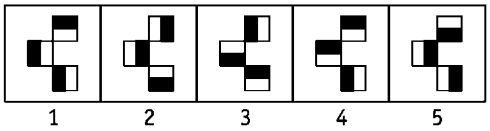


[Rajasthan Bank (PO) 2011]

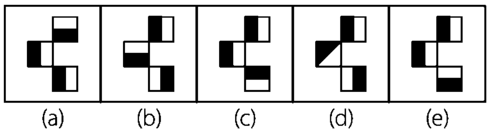
Answer Figures



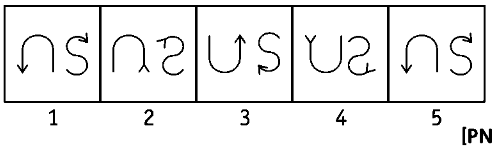
20. Problem Figures



Answer Figures

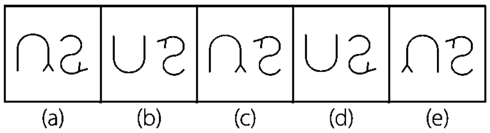


21. Problem Figures



[PNB (PO) 2010]

Answer Figures



22. Problem Figures

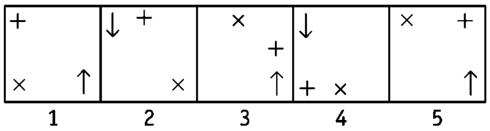
1	2	3	4	5
PLANE	LPNAE	PLEAN	LPENA	EPLAN

[Rajasthan Grameen Bank (PO) 2011]

Answer Figures

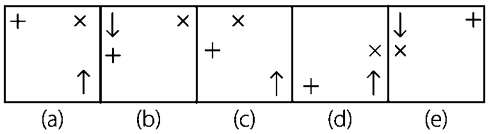
(a)	(b)	(c)	(d)	(e)
ELPNA	PELNA	ELPAN	PEALN	PLANE

23. Problem Figures

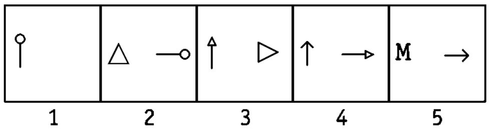


[NIFT (PG) 2013]

Answer Figures

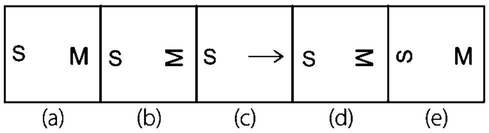


24. Problem Figures

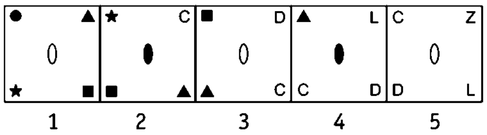


[NIFT (PG) 2013]

Answer Figures

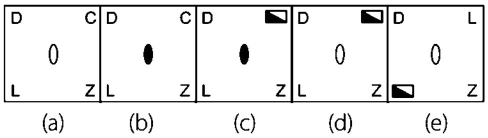

S M
S M
S
S M
S M
(a)
(b)
(c)
(d)
(e)

25. Problem Figures

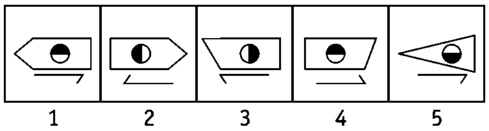

C
D
L
Z
C
D
L
Z
0
0
0
1
2
3
4
5

[Corporation Bank (PO) 2011]

Answer Figures

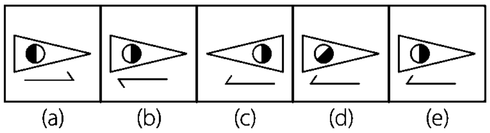

D C L Z
D C L Z
D L Z
D L Z
D L Z
0
0
0
(a)
(b)
(c)
(d)
(e)

26. Problem Figures

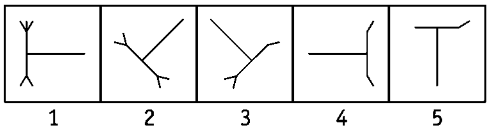


[OBC (Clerk) 2009]

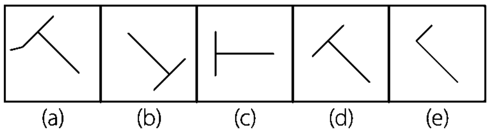
Answer Figures



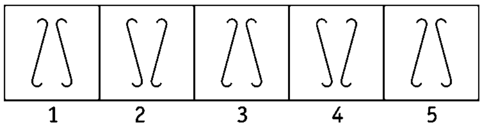
27. Problem Figures



Answer Figures

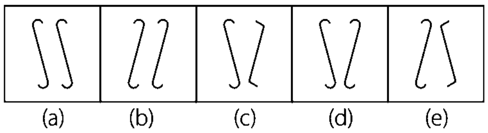


28. Problem Figures

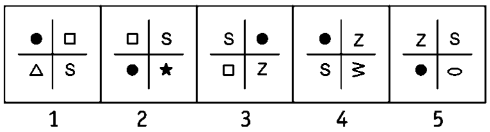


[Corporation Bank (PO) 2011]

Answer Figures

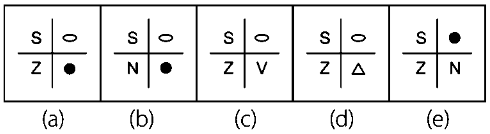


29. Problem Figures

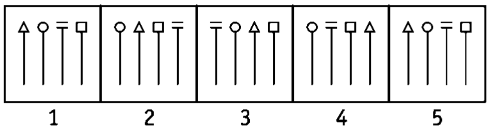


[Corporation Bank (PO) 2011]

Answer Figures

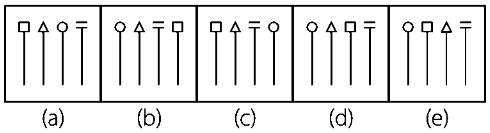


30. Problem Figures

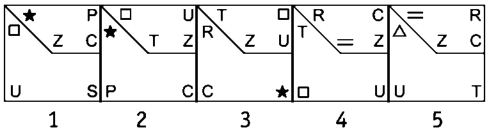


[PNB (Clerk) 2011]

Answer Fiqgures

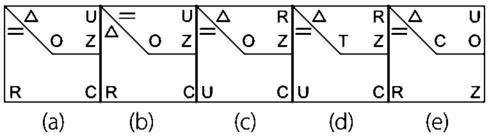


31. Problem Figures

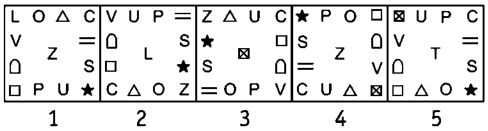


[Indian Bank (PO) 2011]

Answer Figures

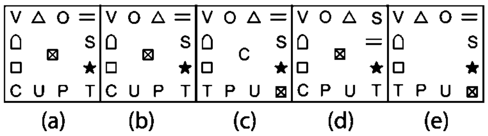


32. Problem Figures



[Indian Bank (PO) 2011]

Answer Figures



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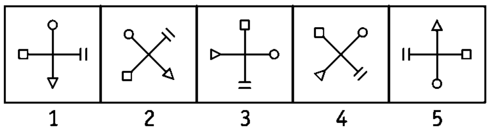
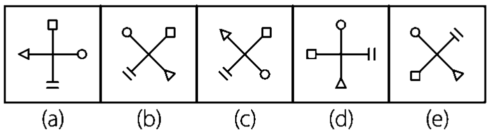


[SBI (Clerk) 2011]

Answer Figures



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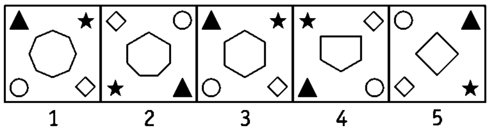

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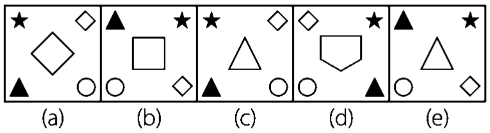

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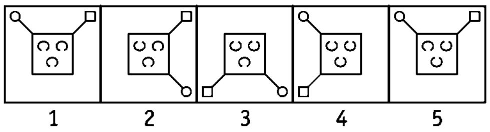

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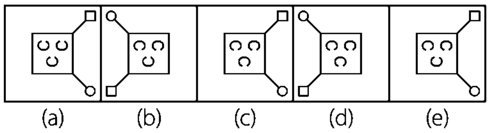
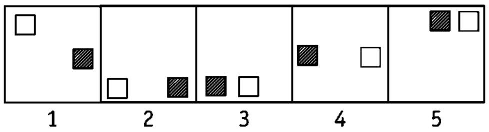
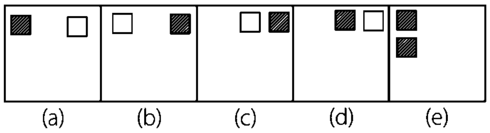


36. Problem Figures



[NIFT (UG) 2013]

Answer Figures



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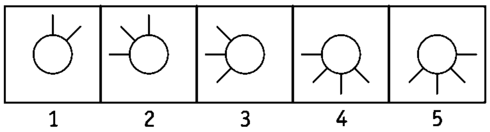

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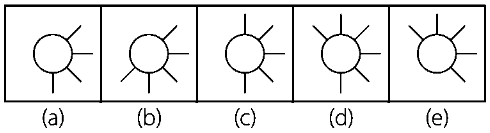
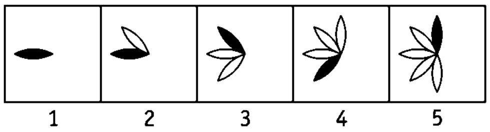


38. Problem Figures



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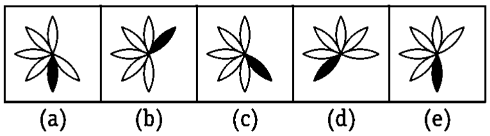
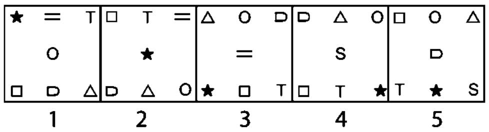
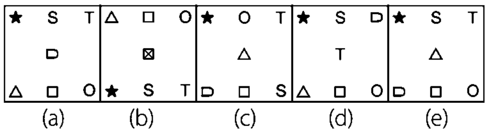


39. Problem Figures

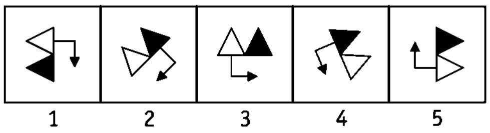


[Corporation Bank (PO) 2011]

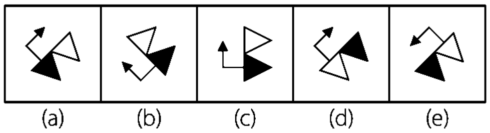
Answer Figures



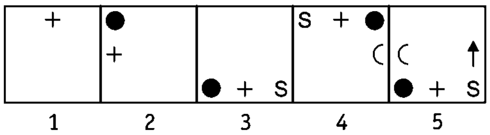
40. Problem Figures



Answer Figures

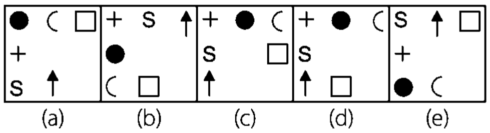


41. Problem Figures

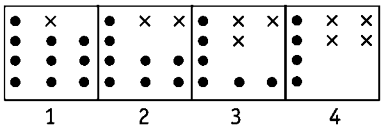


[Union Bank (PO) 2010]

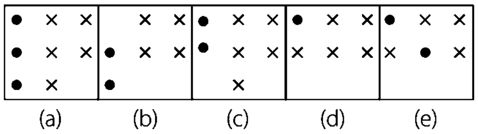
Answer Figures



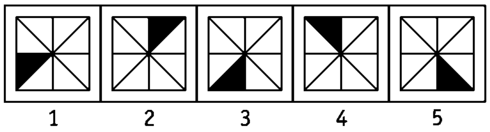
42. Problem Figures



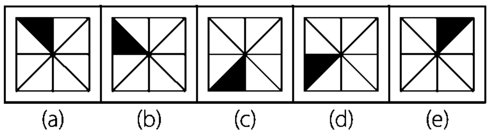
Answer Figures



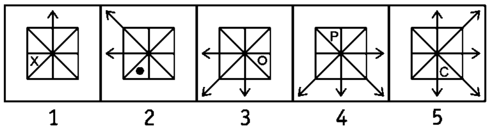
43. Problem Figures



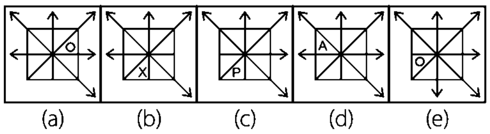
Answer Figures



44. Problem Figures

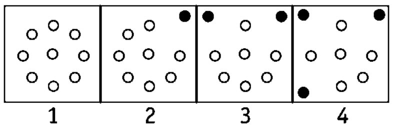


Answer Figures

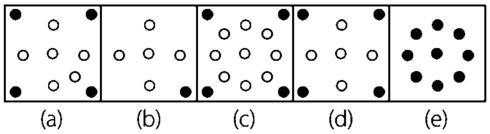


Directions (Q. Nos. 45-60) Each of the questions, consist of four figures marked 1, 2, 3 and 4 named as the problem figures and is followed by five answer figures marked (a), (b), (c), (d) and (e). Select a figure from the answer figures which will continue the series as established by the four problem figures.

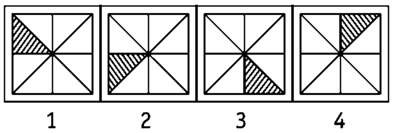
45. Problem Figures



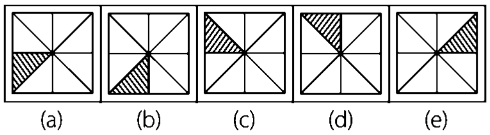
Answer Figures



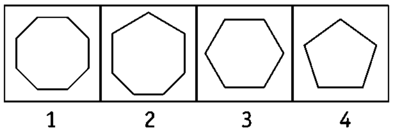
46. Problem Figures



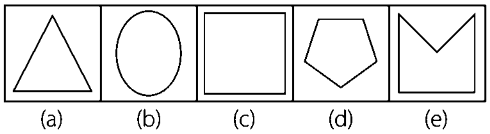
Answer Figures



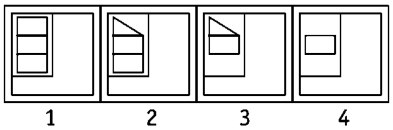
47. Problem Figures



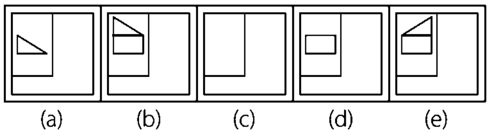
Answer Figures



48. Problem Figures



Answer Figures



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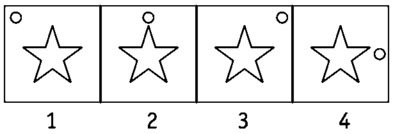
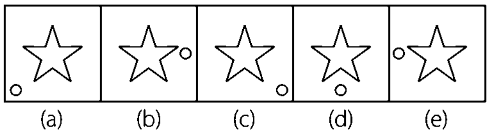
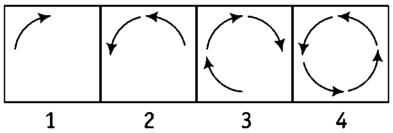


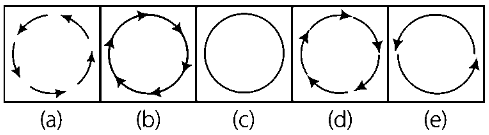
Answer Figures



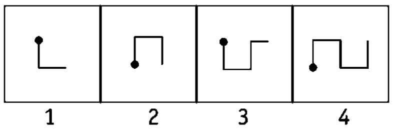
50. Problem Figures



Answer Figures



51. Problem Figures



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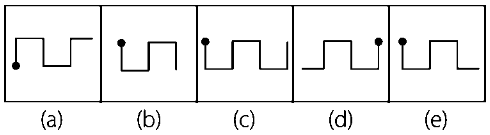
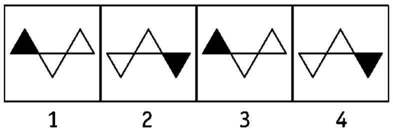
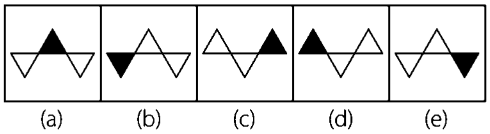


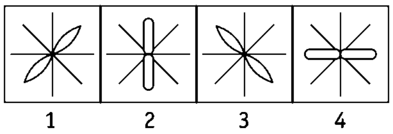
52. Problem Figures



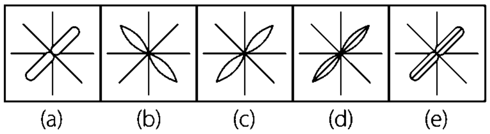
Answer Figures



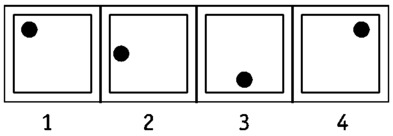
53. Problem Figures



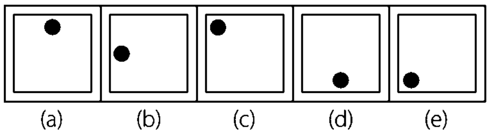
Answer Figures



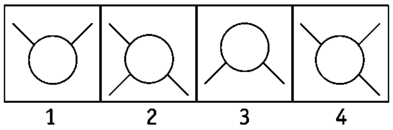
54. Problem Figures



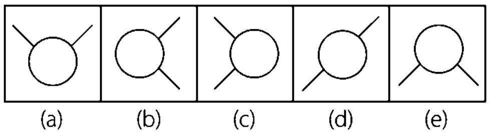
Answer Figures



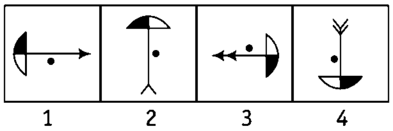
55. Problem Figures



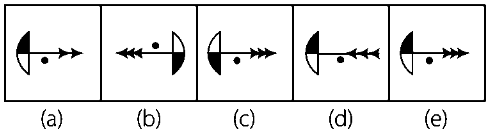
Answer Figures



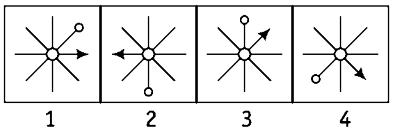
56. Problem Figures



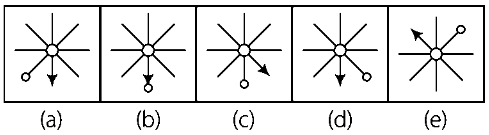
Answer Figures



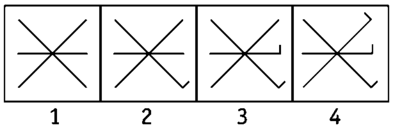
57. Problem Figures



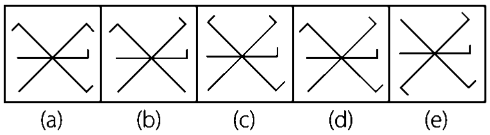
Answer Figures



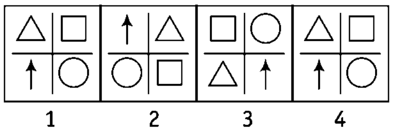
58. Problem Figures



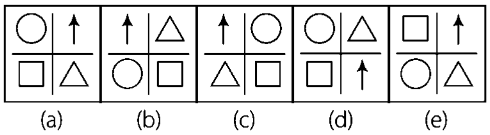
Answer Figures



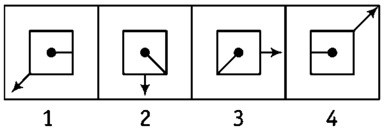
59. Problem Figures



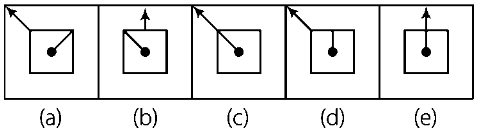
Answer Figures



60. Problem Figures



Answer Figures



Response & Interpretations **(1.1)**

1. (*b*) Dark circle moves one step clockwise and addition of a new element takes place at the centre.

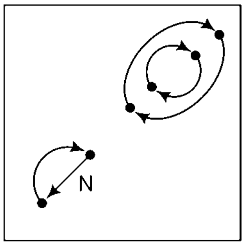
2. (*e*) All elements in the figure moves one step anti-clockwise.

3. (*a*) The elements at the face of the cylinder remain the same for two corresponding figures; like problem figures (1) and (2) have same face elements; problem figures (3) and (4) also have same face elements.

So, problem figure (5) and the answer figure must also have same face elements. Among the two corresponding figures, one is vertical while other is horizontal. As problem figure (5) is vertical, the answer figure must be horizontal. Also, the number of shaded dots is increased by one in each subsequent figure.

4. (*b*) Circle moves one and half and one step anti-clockwise alternately while arrow rotates 135° and 90° clockwise alternately.

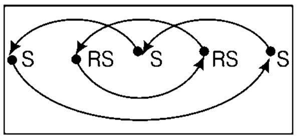
5. (*e*) The sequence of the problem figures is (whole figure rotates 45° clockwise direction)



N = New design

Problem figure (1) to (2)
Problem figure (3) to (4)
Problem figure (5) to answer figure

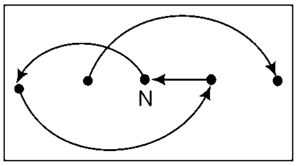
6. (*a*) The sequence ofthe problem figures is



S = Same design
RS = Reverse same design

Problem figure (1) to (2)
Problem figure (3) to (4)
Problem figure (5) to answer figure.

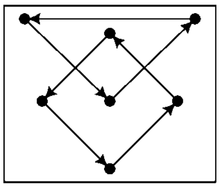
7. (*b*) The sequence of the problem figures is



N = New design

Problem figure (1) to (2)
Problem figure (3) to (4)
Problem figure (5) to answer figure

8. (*a*) The sequence of the problem figures is



Problem figure (1) to (2)
Problem figure (3) to (4)
Problem figure (5) to answer figure

9. (*d*) In each problem figure one new design adds and after rotating 90° in anti-clockwise direction, design shifts one place in anti-clockwise direction.

10. (*c*) Problem figure (1) is same as figure (5), hence answer figure will be same as the figure (2).

11. (*c*) The figure rotates 45° and 90° anti-clockwise alternatively and the symbols move one side anti-clockwise each time.

12. (*d*) From figure (1) to (2) black dots move one step in anticlockwise direction. From figure (2) to (3) white circles move one step anti-clockwise and this process goes on in alternate steps.

13. (*e*) Circle moves $\frac{1}{2}$ and 1 steps alternatively in each subsequent block and a new figure is added before it. Each time new figure is preceded by another new figure in the subsequent figures.

14. (*c*) In each successive problem figure, there is an addition of 3 and 2 dots, respectively and 2 and 3 lines, respectively.

15. (*d*) The series of letters present horizontally is moving one position downwards in each subsequent figure along with addition of a new element in the vertical series in place of an old element. Also, from problem figures (1) to (2), the two letters present on left side of the vertical line interchange their position. Same is the case for right side letters from problem figures (2) to (3), the letters present on left side interchange their position with the letters present on the right side. Now, the same process repeats.

16. (*e*) Triangle becomes reversed and one dot is increasing one-by-one.

17. (*b*) In the 1st step two lower elements interchange places while the other three shift anti-clockwise in cyclic order. In the next step the upper two elements interchange places while the remaining three shift one step anti-clockwise in a cyclic order. In the next step all the elements which are present in the horizontal line move one position downwards while elements present at corners move 90° anti-clokwise. Now, the whole process repeats except that the shifting of three elements is now clockwise.

18. (*d*) In each step, the clockwise end element moves to the anti-clockwise end elements.

19. (*a*) From problem figure (1) to (2), whole figure rotates anti-clockwise direction and changes its position with a certain rule. Similar rule follows from problem figure (3) to (4) and problem figure (5) to answer figure.

20. (*c*) Problem figure (5) is same as figure (1) with shifting of shaded portion in opposite direction. Therefore, answer figure will be same as figure (2) with shifting of shaded portion.

21. (*c*) Both the symbols are inverted from figure (1) to (2) and become upside down from figure (2) to (3). The arrow heads get inverted in each step.

22. (*a*) From problem figure (1) to (3) and (3) to (5) letter E comes two place left and other letters have been written in same order. Similar rule follows from problem figure (2) to (4) and (4) to answer figure.

23. (*b*) It is clear that '+' (plus sign) is moving .5,1,1.5,2...step in clockwise direction, '×' (multiplication sign) is moving 1, 1.5, 2, 2.5 ... step in anti-clockwise direction and finally '↑' (arrow sign) is changing its place to top left and right bottom alternately and gets inverted.

24. (*d*) From problem figure (1) to (2), the symbol on the left rotates 90° clockwise and gets shifted to the right and a new symbol is added on the left. The same pattern follows from problem figure (3) to (4) and (5) to answer figure.

25. (*c*) Inner circle becomes dark and white alternately. All four diagrams are moving anti-clockwise and a new diagram replaces the old one at upper corner right hand side.

26. (*e*) Line at the bottom in figure (1) is same as line at the bottom in figure (5). Therefore, the line in answer figure must be same as in figure (2). Main figure is same for two consecutive figures. Also, the shaded portion of the circle in figure (5) is the reverse of figure (1). Hence, it will be the reverse of figure (2)in answer figure.

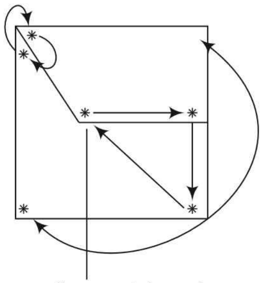
27. (*d*) Figure rotates in anti-clockwise direction through angles of 45°, 90°, 45°, 90°,... and so on and every time one line is deleted from the figure.

28. (*d*) Left hand side diagram comes to right hand side in next figure and *vice versa.*

29. (*e*) Dark circle moves anti-clockwise triangular, rest two diagrams move anti-clockwise and a new diagram also takes place.

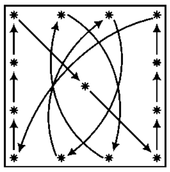
30. (*d*) Change in the position of elements from problem figure (1) to (2) is similar to the changing pattern from problem figure (3) to (4). Similarly, the changing pattern from problem figure (2) to (3) is same as changing pattern from problem figure (4) to (5). So, the changing pattern from problem figure (5) to the answer figure must be similar to the changing pattern from problem figure (3) to (4).

31. (*a*) Diagrams are moving as follows



Problem figure (1) to (2)
Problem figure (3) to (4)
Problem figure (5) to answer figure

32. (*c*) Diagrams are moving as follows



Problem figure (1) to (2)
Problem figure (3) to (4)
Problem figure (5) to answer figure

33. (*c*) There is alternate rotation of 45° anti-clockwise and 135° clockwise.

34. (*c*) The number of sides in the central figure is reducing by 1, so triangle will come in the centre of answer figure. Other elements follow 1 – 2 – 3 pattern then, 4-5-6 also follows similar pattern.

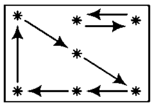
35. (*e*) In the first step the line containing circle comes to the opposite corner with the line containing square remains constant and in the next step, the line containing square comes to the opposite corner with the line containing circle remains constant and so on. The '∩' figures inside the big square get inverted , one-by-one in each step.

36. (*b*) Blank box in every figure is moving anti-clockwise as 90° and 45° alternatively and filled or lined box is moving clockwise 90° and 45° alternatively. So, the answer figure will be obtained as 'b'.

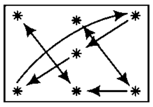
37. (*c*) Figures rotate through an angle of 45° in anti-clockwise direction with an addition of one line from figure (1) to (2), (3) to (4) and (5) to the answer figure.

38. (*e*) The black leaf rotates 0°, 45°, 90°,... anti-clockwise and clockwise alternatively and a white leaf is added in each step at the end other than that where black leaf is present.

39. (*c*)



From Fig. (1) to (2)
(4) to (5)



From Fig. (2) to (3)
5 to answer figure

40. (*a*) The figure rotates 45° clockwise in each successive figure. Shaded triangle shifts to the other side from problem figure (1) to (2) and arrow is shifted to the other side from problem figure (2) to (3) and this process is repeated alternatively.

41. (*a*) The sign '+' moves 1, 1, 2, 2, 3,... steps anti-clockwise and one new symbol is added before and after it, in each of the successive figures.

42. (*c*) Two dots disappear and one cross appears in each subsequent figure. So, in continuation with the given series of figures, the next figure would be '*c*'.

43. (*b*) Shaded portion moves one block anti-clockwise from problem figure (1) to (3) and (3) to (5). The same process takes place from problem figure (2) to (4) and from (4) to the answer figure.

44. (*d*) From problem figures (1) to (2), arrow rotates 45° anti-clockwise and one more arrow is added ahead of it in anti-clockwise direction and the same method is repeated in the subsequent figures. The figure in the middle moves in anti-clockwise manner with a gap of 1, 2, 3, 4,... spaces and is replaced by a new figure in each of the subsequent figures.

45. (*d*) In each step, one of the circles turns black and moves to a corner of the square boundary.

46. (*b*) The shading moves one, two, three, four, ... spaces anti-clockwise sequentially.

47. (*c*) The number of sides of the figure reduces by one in each step.

48. (*c*) Half portion of a rectangle is lost in one step and one complete rectangle is lost in the next step.

49. (*c*) The circle moves half-a-side of the square boundary in clockwise direction in each step.

50. (*d*) The figure gets laterally inverted and the number of arrows increases by one in each step.

51. (*e*) In each step, the figure gets vertically inverted and a line segment is added to the RHS-end.

52. (*d*) Similar figure repeats in every second step.

53. (*c*) Similar figure repeats in every second step and each time a particular figure reappears, it gets rotated through 90°.

54. (*e*) The circle moves sequentially one, two, three, four, ...spaces (each space is equal to half-a-side of the square boundary) in anti-clockwise direction.

55. (*a*) Similar figure repeats in every second step and each time a particular figure reappears, it gets rotated through 180°.

56. (*e*) Similar figure repeats in every second step. Each time a particular figure reappears, it gets rotated through 180° and the number of arrowheads increases by one.

57. (*d*) The arrow moves 4, 3, 2 and 1 spaces clockwise sequentially and the pin moves 5, 4, 3, and 2 spaces anti-clockwise sequentially.

58. (*d*) A new small line segment is added to one of the lines in the figure and this addition takes place sequentially in anti-clockwise direction.

59. (*a*) All the elements move one space clockwise and two spaces clockwise alternately.

60. (*d*) As we go from left to right, the arrow moves 45° and 90° anti-clockwise alternately and the pin moves 45° and 90° clockwise alternately.

Type 2 Choosing the Missing Figure in the Series

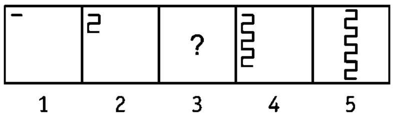
In this type of questions, one figure from the set of problem figures, marked as (1, 2, 3, 4, 5) is missing and this missing figure is represented by the **sign** '?'. The set of problem figures is followed by a set of answer figures which contains the figure which will replace the sign of '?' in the problem figures. Candidates are asked to choose one figure from the set of answer figures marked as (a, b, c, d, e) which completes the series of problem figures, based on a certain rule and replaces the sign '?'.

The figure from the set of answer figures that establishes a rule on which the problem figure series is completed is your answer. The method to solve these questions is same as discussed for the previous type.

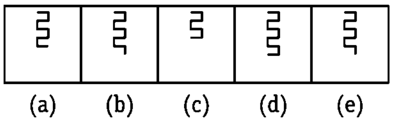
This type of questions are being discussed exhaustively in following examples

Directions (Example Nos. 18-25) Each of the following questions consists of five problem figures marked as 1, 2, 3, 4 and 5, followed by five answer figures marked as (a), (b), (c), (d) and (e). If one of the five answer figures is placed in the place of '?' in the problem figure, a series is established and the figure which replaces the '?' is your answer.

***Ex* 18** **Problem Figures**

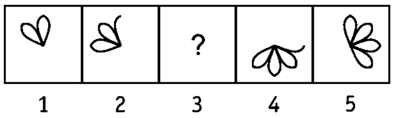


Answer Figures

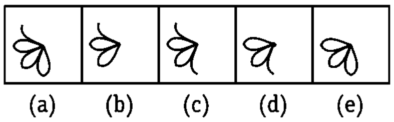


Sol. (*a*) There is an addition of four lines in the pre-existing figure in each of the successive figures.

***Ex* 19** **Problem Figures**

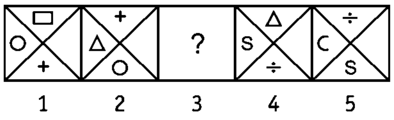


Answer Figures

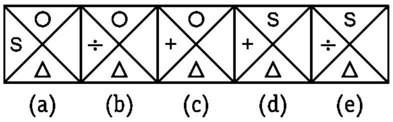


Sol. (*e*) The figure rotates 45° and 90° alternatively in anti-clockwise direction and half leaf is added everytime to the figure.

Ex **20** **Problem Figures**

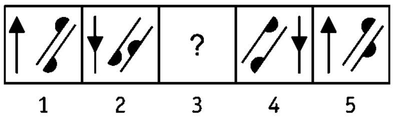


Answer Figures

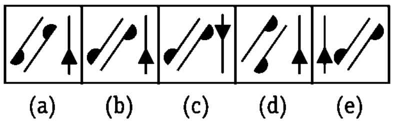


Sol. (*b*) All the symbols move anti-clockwise in a triangular order and the symbol on left hand side is replaced by a new symbol which comes at the bottom in the subsequent figure.

Ex **21** **Problem Figures**



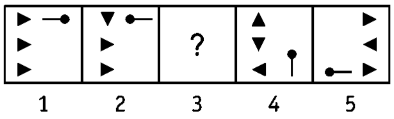
Answer Figures



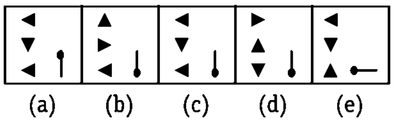
Sol. (*b*) The head of arrow travels half distance every time and is reversed in each successive figure. The head of the upper line moves to other side of the line and is reversed from figure (1) to (2) but it does not move from figure (4) to (5), only gets reversed at the same position.

It implies that from figure (2) to (3), the head will not move and will be reversed at the same position. The head of the lower line moves half distance and gets reversed at the same position.

Ex **22** **Problem Figures**

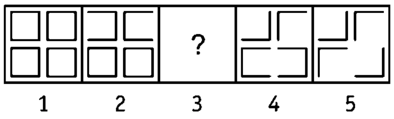


Answer Figures

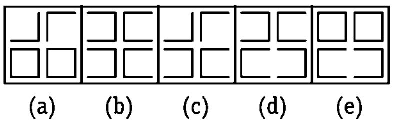


Sol. (*c*) The upper triangle rotates through an angle of 90° clockwise in each successive figure, the middle triangle rotates through an angle of 90° clockwise in every second figure and the third triangle rotates through an angle of 180° in every second figure. The line with the black head is inverted at the same position from problem figure (1) to (2) and so it will from figure (3) to (4).

Ex **23** **Problem Figures**

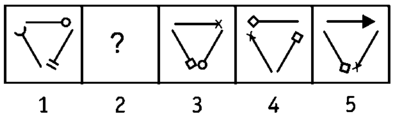


Answer Figures

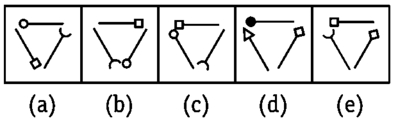


Sol. (*d*) Two lines, each from upper and lower pairs of squares disappear, in a set order to from each successive figure.

Ex **24** **Problem Figures**

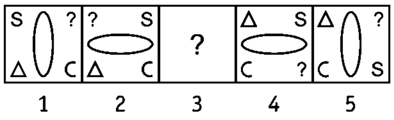


Answer Figures

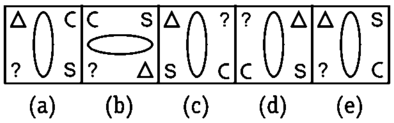


Sol. (*c*) Each symbol of the figure rotates in anti-clockwise direction and a new symbol replaces the symbol at the top which is inverted alternatively in each of the successive figures.

Ex **25** **Problem Figures**



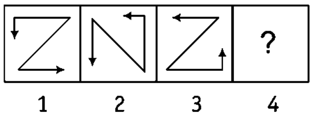
Answer Figures



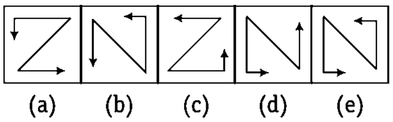
Sol. (*e*) Two symbols, starting from the top, in anti-clockwise direction are interchanged with each other and the main figure rotates 90° in every successive figure.

Directions (Example Nos. 26-28) Each of the following questions consists of three/four problem figures marked as 1, 2, 3 and 4 followed by four/five answer figures marked as (a), (b), (c), (d) and (e). If one of these answer figures is placed in the place of '?' in the problem figure, a series is established and the figure which should replace the '?' is your answer.

***Ex* 26 Problem Figures**

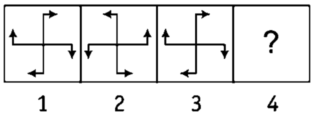


Answer Figures

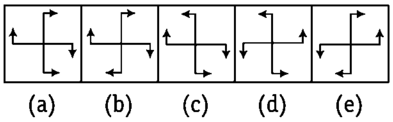


Sol. (*d*) The figure rotates 90° clockwise in each step. Clearly, Fig. (4) will be obtained by rotating Fig. (3) through 90° clockwise. So, Fig. (d) should replace the question mark in Fig. (4).

***Ex* 27 Problem Figures**

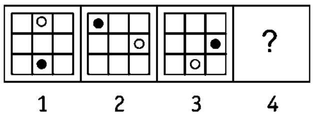


Answer Figures

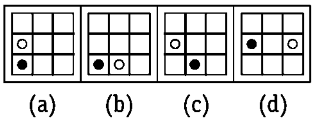


Sol. (*d*) The figure gets laterally inverted in each step. Clearly, Fig. (4) is obtained by the lateral inversion of Fig. (3).

***Ex* 28 Problem Figures**



Answer Figures



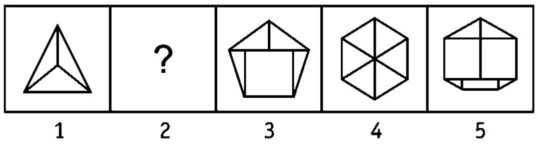
Sol. (*a*) In each turn, the black circle moves three steps clockwise and the white circle moves two steps clockwise.

Practice Corner **1.2**

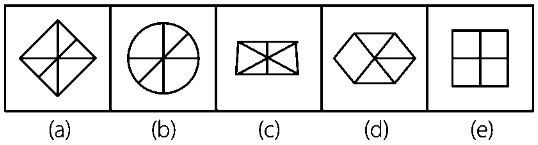
Build your Confidence...

Directions (Q. Nos. 1-43) In each of the following questions, there are two sets of figures. The figures on upper side are problem figures marked by numbers 1, 2, 3, 4 and 5 and on the lower side are the answer figures marked by letters (a), (b), (c), (d) and (e). A series is established, if one of the five answer figures is placed in place of the sign '?' in the problem figures and that figure is your answer.

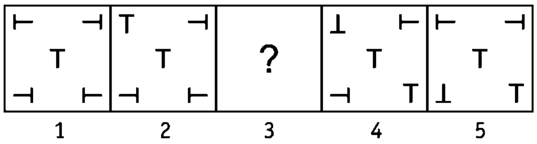
1. Problem Figures



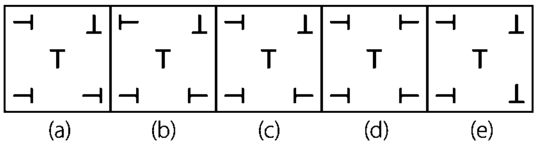
Answer Figures



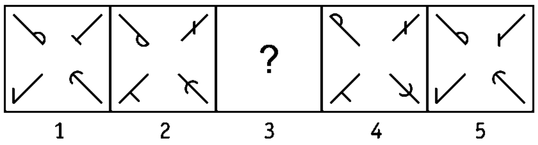
2. Problem Figures



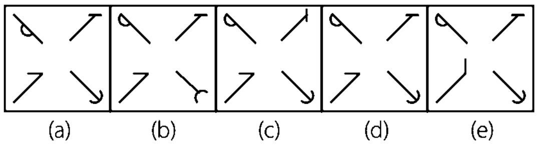
Answer Figures



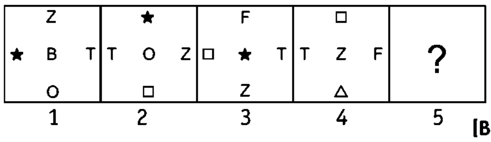
3. Problem Figures



Answer Figures



4. Problem Figures


Z ★ B T O
★ T O Z □
F □ ★ T Z
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?
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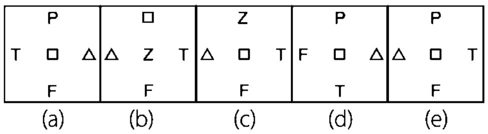
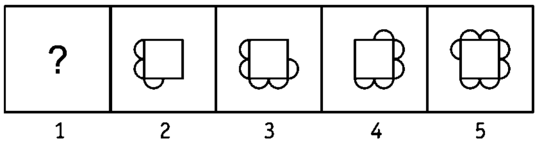
[BOB (PO) 2011]

Answer Figures

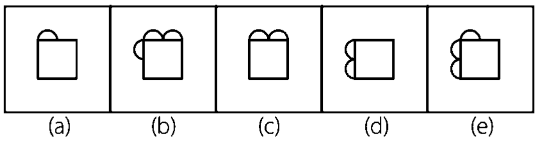

P T □ △ F
□ △ Z T F
Z △ □ T F
P F □ △ T
P △ □ T F
(a)
(b)
(c)
(d)
(e)

5. Problem Figures

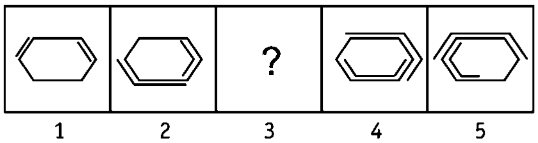


[Union Bank (PO) 2011,Canara Bank (PO) 2008]

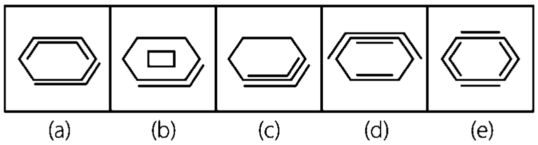
Answer Figures



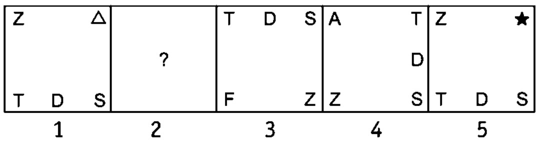
6. Problem Figures



Answer Figures



7. Problem Figures


Z △ T D S
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A T D Z S
Z ★ T D S
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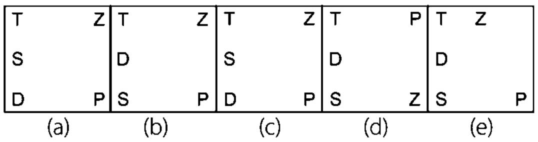
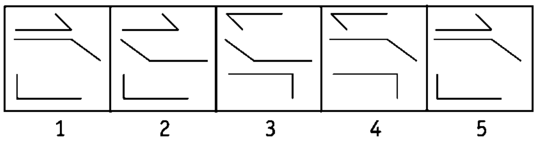
Answer Figures

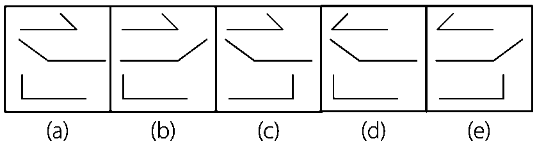
[BOB (PO) 2011]


T Z S D P
T Z D S P
T Z S D P
T P D S Z
T Z D S P
(a)
(b)
(c)
(d)
(e)

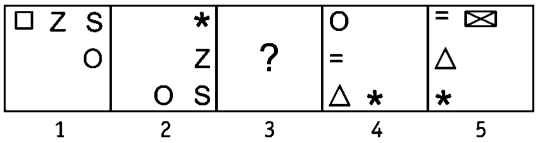
8. Problem Figures



Answer Figures



9. Problem Figures


□ Z S O
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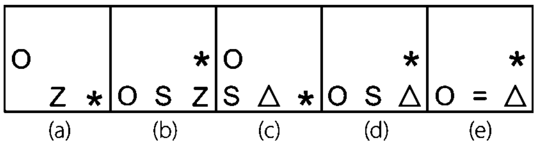
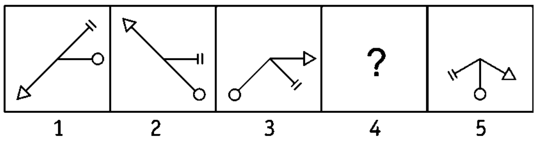
[Allahabad Bank (PO) 2008]

Answer Figures

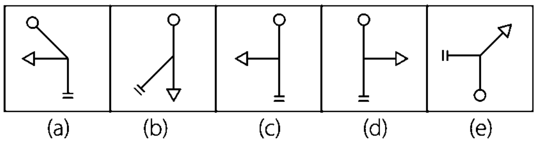

O Z *
* O S Z
O S △ *
* O S △
* O = △
(a)
(b)
(c)
(d)
(e)

10. Problem Figures

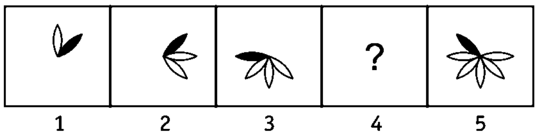


Answer Figures

[BOB (PO) 2011]

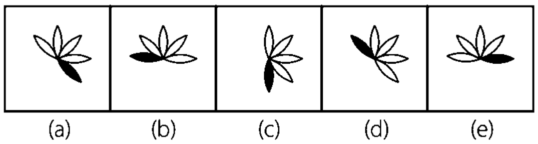


11. Problem Figures



[Union Bank of India (PO) 2011, PNB Clerk 2008]

Answer Figures



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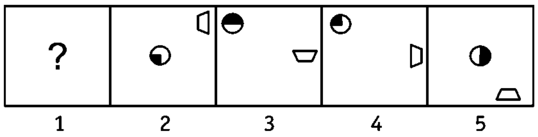
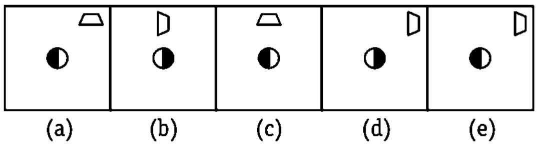


[Union Bank (PO) 2011, UCO Bank (PO) 2008]

Answer Figures



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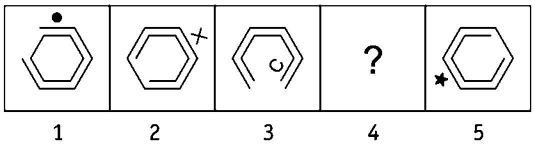
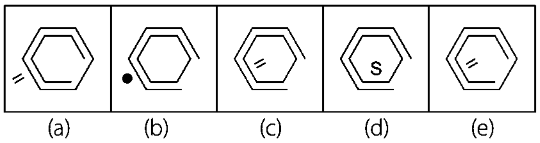


[OBC (PO) 2010]

Answer Figures



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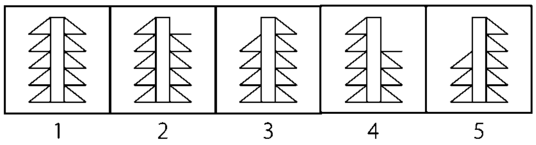

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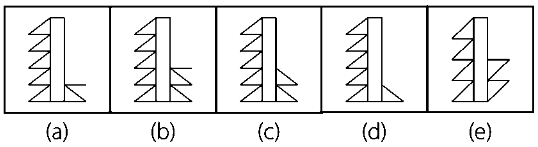

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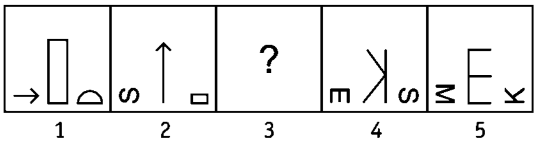

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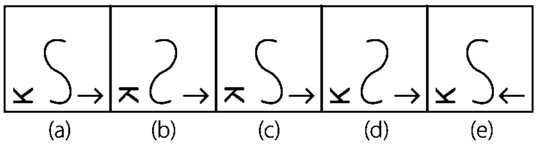

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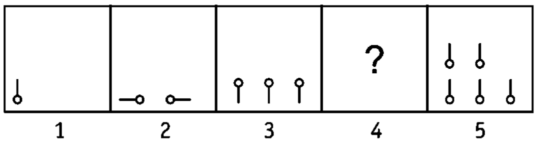

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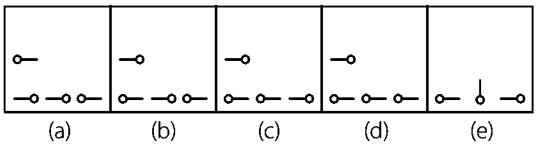

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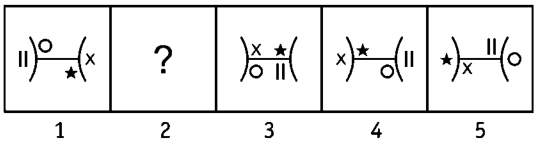
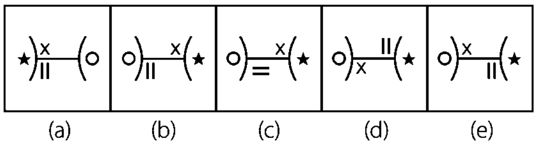


[SBI (Clerk) 2010]

Answer Figures



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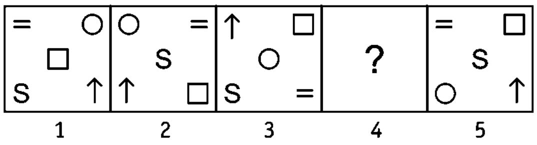

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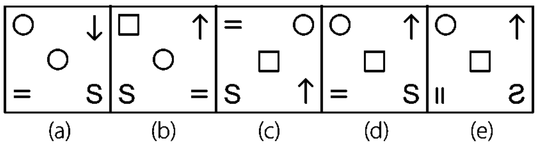
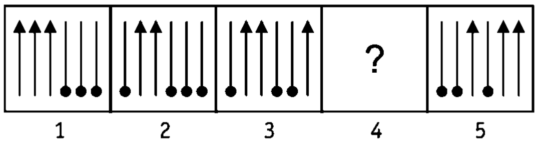
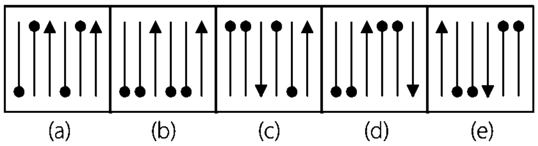


19. Problem Figures



Answer Figures



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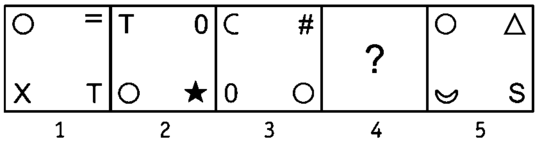

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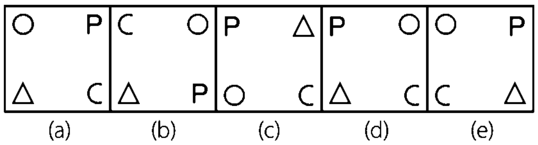

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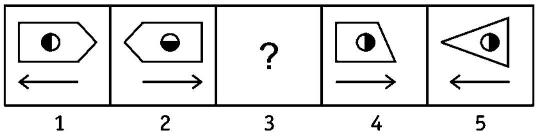

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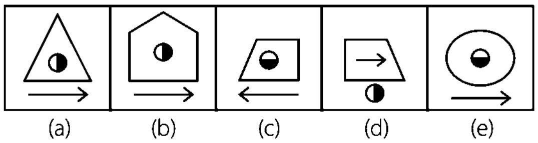

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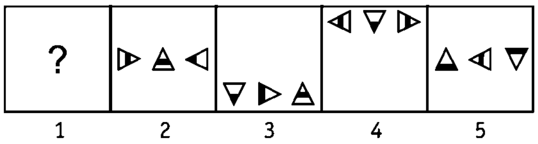
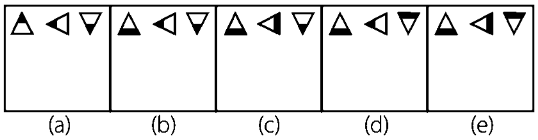
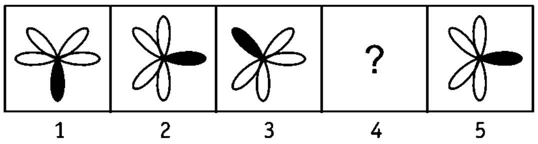


[OBC (Clerk) 2012]

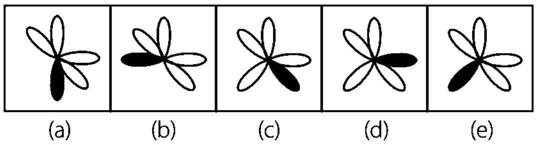
Answer Figures



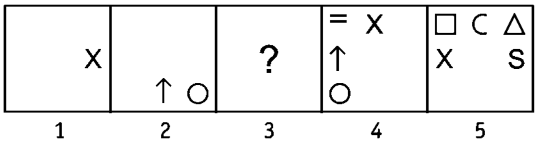
23. Problem Figures



Answer Figures

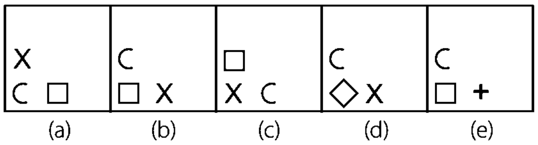


24. Problem Figures



[UCO Bank 2008]

Answer Figures



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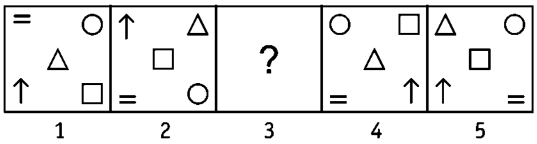

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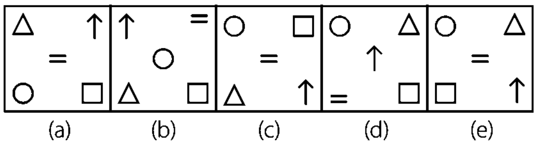

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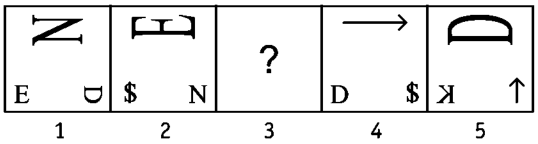

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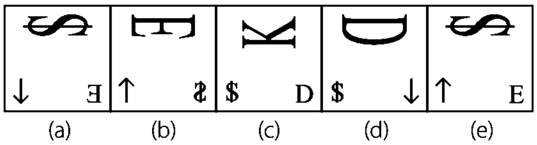

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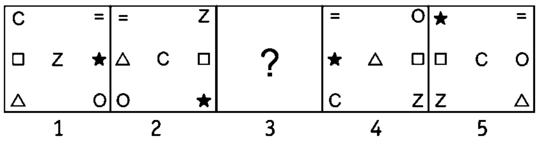
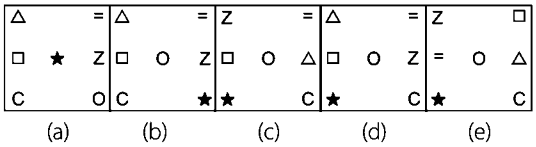
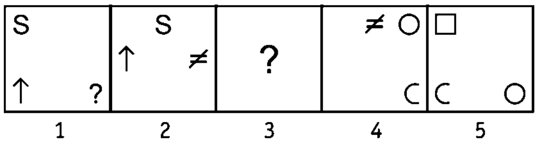


[CBI (Clerk) 2011]

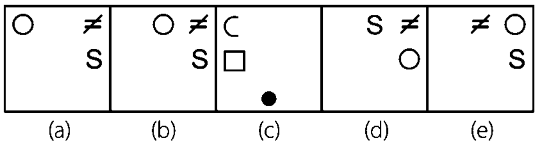
Answer Figures



28. Problem Figures



Answer Figures



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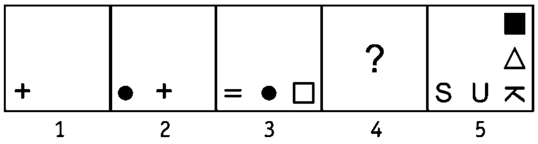
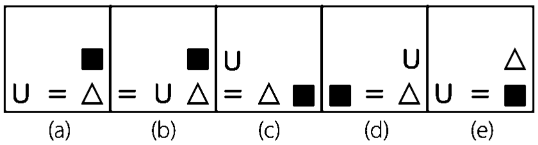
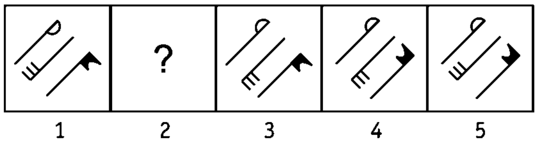


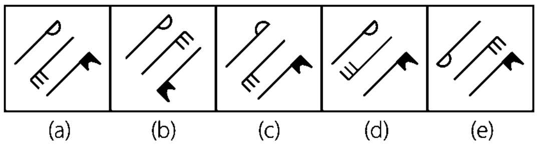
Answer Figures



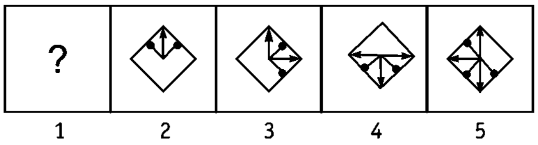
30. Problem Figures



Answer Figures

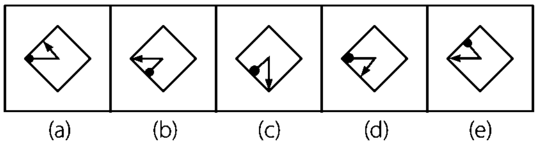


31. Problem Figures



[UCO Bank (Clerk) 2010]

Answer Figures



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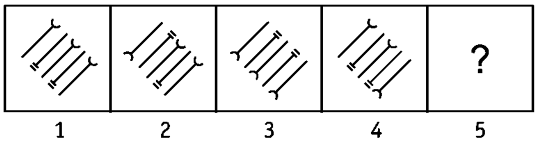

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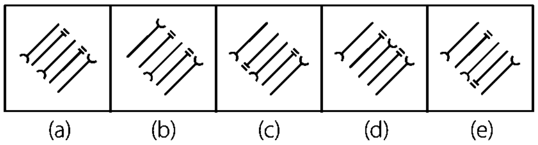

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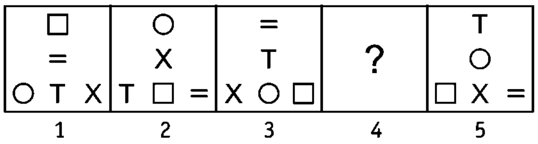

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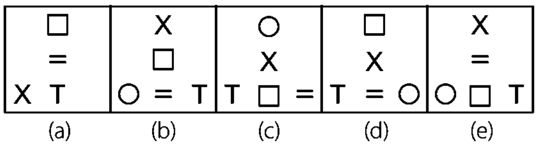

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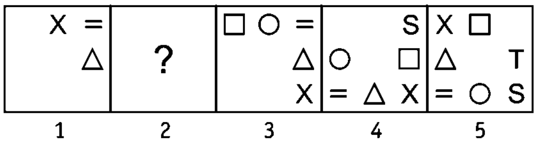
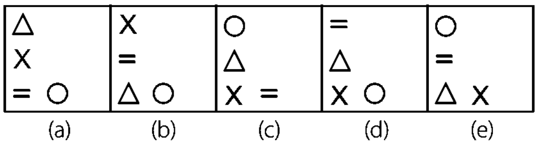


Answer Figures



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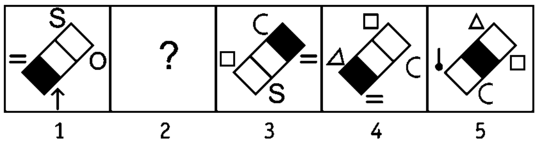
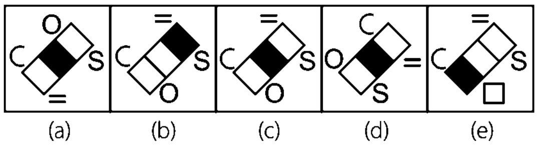


Answer Figures



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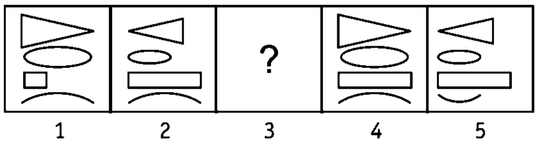

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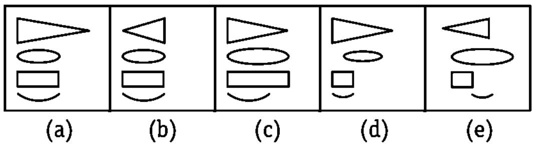

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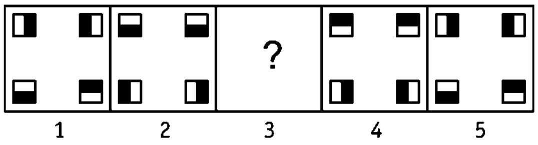
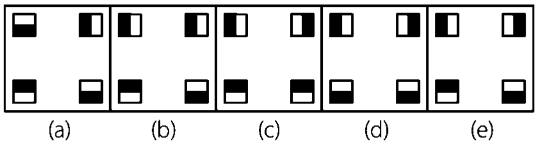
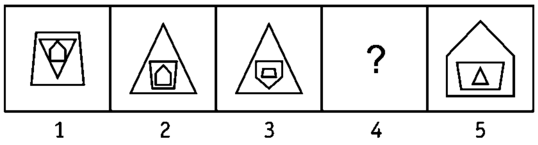


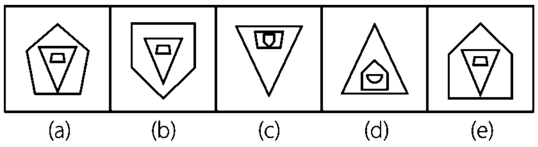
Answer Figures



38. Problem Figures



Answer Figures



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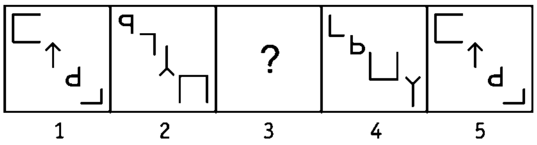
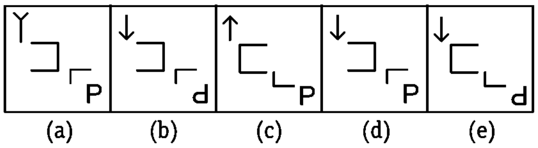
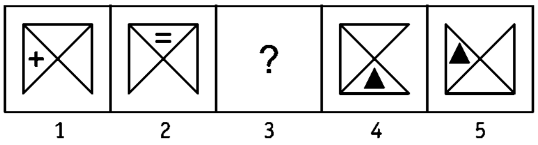


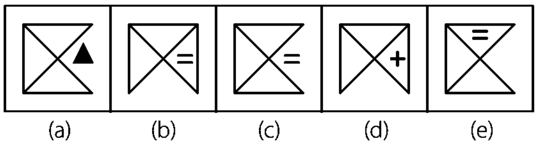
Answer Figures



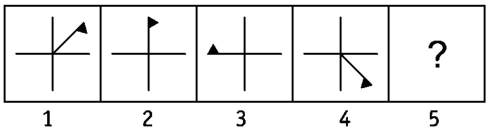
40. Problem Figures



Answer Figures



41. Problem Figures



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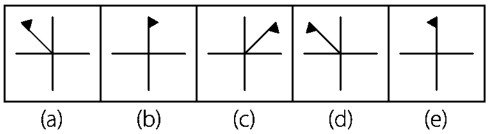
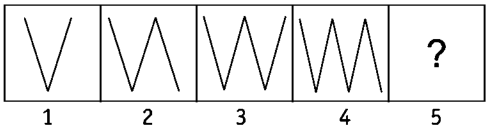


42. Problem Figures



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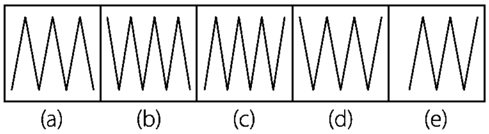
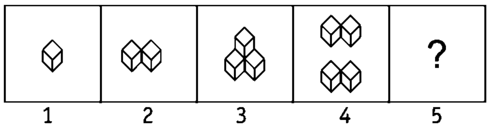


43. Problem Figures



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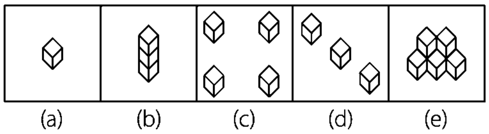
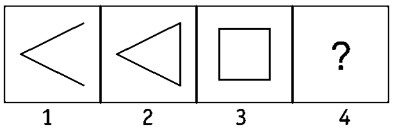
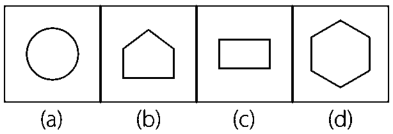


Directions (Q. Nos. 44-53) In each of the following questions, a set of four figures marked 1, 2, 3 and 4 forming a figure series is given, out of which the last one i.e., Fig. (4) is missing. Identify from the four answer figures, marked (a), (b), (c) and (d), the one which would replace the question mark (?) in Fig. (4), so as to continue the series.

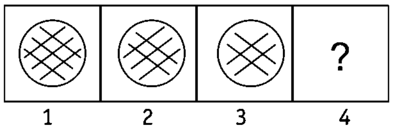
44. Problem Figures



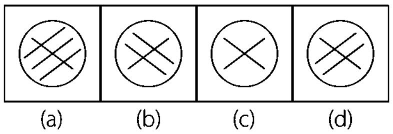
Answer Figures



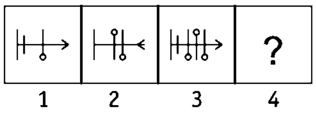
45. Problem Figures



Answer Figures

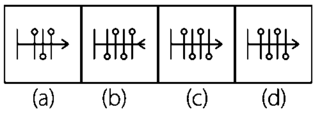


46. Problem Figures

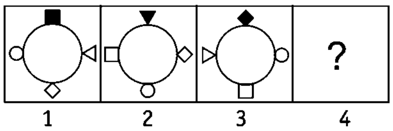


Answer Figures

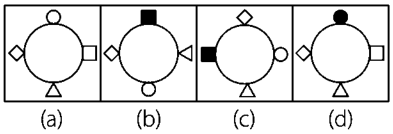
[SSC (10+2) 2013]



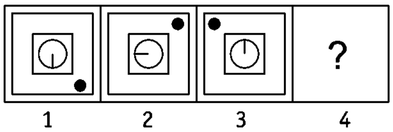
47. Problem Figures



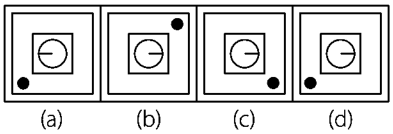
Answer Figures



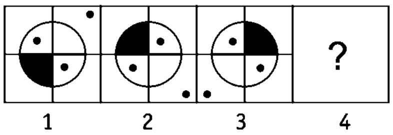
48. Problem Figures



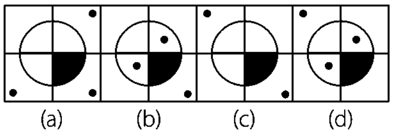
Answer Figures



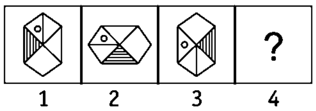
49. Problem Figures



Answer Figures

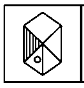


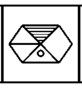
50. Problem Figures

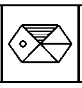


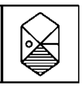
[SSC (10+2) 2013]

Answer Figures

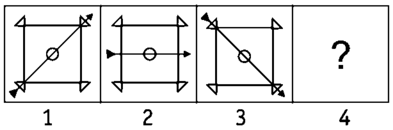

(a)


(b)

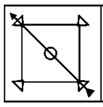

(c)

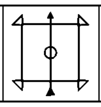

(d)

51. Problem Figures



Answer Figures


(a)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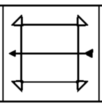
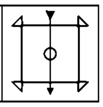
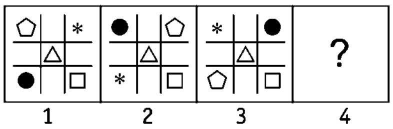
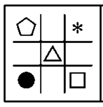

(c)

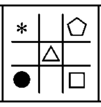

(d)

52. Problem Figures



Answer Figures


(a)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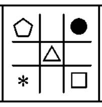
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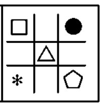
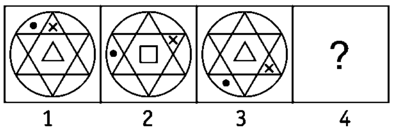
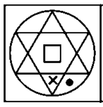
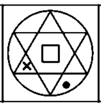

(d)

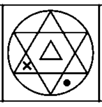
53. Problem Figures

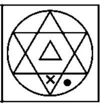


Answer Figures


(a)


(b)


(c)


(d)

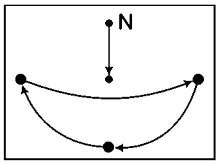
Response & Interpretations **(1.2)**

1. (*e*) Number of lines in each of the successive figures is increased by one and also the number of segments inside the figure is increased by one in subsequent figures.

2. (*d*) The middle sign does not change, the top left sign rotates 90° clockwise in each of the subsequent figures, the top right sign rotates 180° after every two figures, the bottom right sign rotates 90° clockwise after every third figure and the bottom left rotates 90° clockwise after every fourth figure.

3. (*d*) From problem figure (1) to (2), the top left symbol is reversed, line segment on the top right symbol moves half side and rotates 45°, line segment on the bottom left symbol moves half side and similar changes occur from problem figure (3) to (4).

4. (*e*) The sequence of the problem figure (2) to (3) is



N = New design

Similar rule follows from problem figure (4) to answer figure.

5. (*b*) In every alternate step, the whole figure rotates 90° anti-clockwise and in alternate steps two arcs are added on the anti- clockwise side.

6. (*c*) Line segment outside the hexagon rotates anti-clockwise with an addition of one line after every second figure, the line segment inside the hexagon rotates clockwise with an addition of one line after every second figure.

7. (*b*) In each problem figure all designs slip one place in clockwise direction and a new design comes in each problem figure.

8. (*a*) In one step, the middle element rotate through 180° and in the next step, the other two elements rotate through 180°. The two steps are repeated alternately.

9. (*d*) In alternate steps the elements shift one side and a half side clockwise while one of the elements beginning from the anti-clockwise end gets replaced by a new one in each step one by one.

10. (*c*) In each problem figure design 'Δ' rotates 90°, 135°, 180° and 225° in clockwise direction. Design '=' rotates 45° in clockwise direction in each problem figure. Design 'O' rotates 45°, 90°, 135° and 180° in clockwise direction.

11. (*b*) The whole figure rotates by 45°, 90°, 135°, 180°, ..., clockwise in subsequent steps. While a petal is added on the clockwise side in each step, the shaded petal changes side in each step.

12. (*a*) In each step, the quadrilateral rotates 90° anti-clockwise while it shifts half a side clockwise in alternate steps. Also, the circle is half shaded and one-fourth shaded alternately.

13. (*c*) In figure first, outer park of the main figure has one line absent, in second figure, the inner part of the main figure has one line absent and in the third figure both the parts of the main figure have one line absent and is rotating 1 block anticlock wise and the outer symbol is replaced with new symbol and is rotating clockwise. This process will be repeated to obtain figure(4).

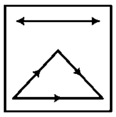
14. (*b*) In each step, the figure gets laterally inverted and one line segment is lost from the upper end of the RHS portion of the figure. In the next step, the figure gets laterally inverted and one line segment is lost from the upper end of the LHS portion of the figure.

15. (*a*) From problem figure (1) to (2), the figure at the bottom left position rotates 90° anti-clockwise and shifts in the middle and is enlarged, the middle figure rotates 90° clockwise and shifts to the right side and becomes small and a new symbol comes on left side. The same process is repeated in the subsequent figures.

16. (*b*) One pin is added in each of the successive figures and the pins rotate anti-clockwise and clockwise in a set order.

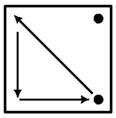
17. (*b*) All the symbols shift one step in **anti-clockwise** direction.

18. (*d*) From figure (1) to (2) all the symbols change positions as shown in the diagram and in each of the subsequent figures the same changing pattern is followed but after rotating the diagram through an angle of 90° anti-clockwise in each step.



19. (*b*) From problem figure (1) to (2), one arrow is replaced by another pin, from problem figure (2) to (3), one pin is replaced by one arrow. The same process is repeated.

20. (*d*) From problem figure (1) to (2), symbols change their positions as shown in the diagram and new symbols appear in place of • and the diagram, if rotated 90° anti-clockwise everytime, produces the changes in each of the subsequent figures.



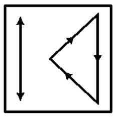
21. (*c*) From problem figure (1) to (2), the main figure is reversed, the shaded portion rotates 90° anti-clockwise and the arrow is also reversed. The same process is repeated from problem figure (3) to (4).

22. (*b*) In each step, the triangles rotate by 90° clockwise. The shading of the right triangle changes alternately. The shadings of the middle and left triangles change in each step in a set order *i.e.,* in middle triangle from top to middle to bottom while in left triangle from bottom to middle to top.

23. (*e*) The figure rotates through an angle of 90°, 135° anti-clockwise in each of the successive figures.

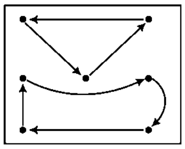
24. (*b*) Similar changes take place from problem figure (1) to (3) and from figure (3) to (5). From figure (1) to (3), the symbol moves one side clockwise and is preceded by two new symbols. Likewise, from figure (3) to (5), all the existing symbols move one side clockwise and are preceded by two new symbols.

25. (*a*) Symbols change place in subsequent figures in such a way that two symbols interchange positions whereas three symbols move in anti-clockwise direction as shown in the diagram. The order of arrangement is rotated 90° clockwise everytime to obtain successive changes in figures.



26. (*a*) From problem figure (1) to (2), the symbol at the bottom left rotates 90° anti-clockwise and shifts to the top position, the symbol at the top rotates 90° anti-clockwise and shifts to the bottom right and a new symbol appears at the bottom left position.

27. (*d*) All changes in problem figure (1) to (2) are given below



Similar rule follows from problem figure (3) to (4).

28. (*b*) Symbol at the bottom right moves half side anti-clockwise, symbol at the bottom left and top left move half side and one side alternatively clockwise in each of the successive figures and a new symbol appears in place of each symbol one by one.

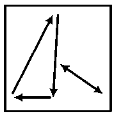
29. (*a*) The symbol at the bottom left in each figure moves half side anti-clockwise and one, two, three, ... new symbols are added in a set order in each of the successive figures.

30. (*a*) From problem figure (1) to (2), the middle symbol is reversed, from figure (2) to (3), the upper symbol is reversed and from figure (3) to (4), the lower symbol is reversed and the same process is repeated in each of the successive figures.

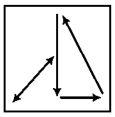
31. (*b*) In each step the whole figure rotates by 90° clockwise while one element is added in each step alternately on clockwise and anti-clockwise end.

32. (*a*) In subsequent steps, 2, 3, 4, 5, ... elements get inverted.

33. (*b*) Symbols change in each of the successive figures as shown in the two diagrams alternatively.



From Fig.
1 to 2



From Fig.
2 to 3

34. (*d*) From problem figure (1) to (2), second symbol counting from anti-clockwise direction *i.e.,*= moves one side in anti-clockwise direction and is immediately followed by the third symbol *i.e.,* Δ and first symbol *i.e.,* X and a new symbol comes in the beginning of the series. The same process is repeated in the subsequent figures.

35. (*c*) All the symbols around the bar move in clockwise direction in such a way that one of the symbols is replaced by a new symbol as soon as it crosses the bar. The shaded portion moves one step from figure (1) to (2), (2) to (3) and then comes in the original position.

36. (*e*) From problem figure (1) to (2), first, second and third symbols from the top are changed in such a way that large symbol becomes small and *vice-versa* and also the triangle is inverted. The same process is repeated from figure (2) to (3) for second, third, fourth symbols and third, fourth and first symbols from figure (3) to (4) and so on.

37. (*e*) All shaded portion rotates 90° in clockwise direction in each square except top right square in which shaded portion rotates 90° anti-clockwise in such a way that it touches every side of square one by one in the subsequent figures.

38. (*e*) From problem figure (1) to (2), first and second figures interchange their positions and are reversed at the new positions and at the same time, the third figure remains unchanged.
From problem figure (2) to (3), second and third figures interchange their positions and are reversed at the new positions and the figure (1) remains unchanged. The same process is repeated alternatively.

39. (*d*) First, second, third and fourth symbols from the top become first, second, fourth and third from the bottom. The symbol in | | shape rotates 90° clockwise in each successive figure. The P-shaped figure is first inverted and then reversed, alternatively.

40. (*c*) The main figure rotates through an angle of 90° anti-clockwise in every second figure. The symbol inside the main figure rotates clockwise one step and is replaced by a new symbol in every alternate figure.

41. (*a*) The flag rotates 45° anti-clockwise, 90° anti-clockwise, 135° anti-clockwise, 180° anti-clockwise, ... sequentially. Clearly, after Fig. (d), the flag should rotate 180° anti-clockwise.

42. (*d*) Clearly, one line segment is added to the RHS of the figure in each step. Hence, Fig. (d) is the answer.

43. (*e*) The number of cubes increases by one in each step.
Hence, Fig. (e) is the answer.

44. (*b*) The number of sides in the figure increases by one in each step.

45. (*d*) In one step, a line segment is lost from one set of slanting lines and in the next step, a line segment is lost from the other set of slanting lines.

46. (*c*) In every successive step, the line with the circle is increased by one on the left side in opposite direction and a small line appears in every odd numbered figure.

47. (*d*) In each step, the four elements on the circumference of the large circle interchange positions in an anti-clockwise direction; the element that reaches the upper position gets shaded and the element that reaches the LHS position gets unshaded.

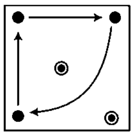
48. (*d*) In each step, the central element (comprising of the circle and a radius) rotates 90° clockwise while the small black circle moves to the adjacent corner of the square in an anti-clockwise direction.

49. (*d*) In each step, the figure rotates through 90° clockwise.

50. (*c*) The figure rotates 90° anti-clockwise in every successive step and the circle moves one block in clockwise direction.

51. (*d*) The arrow rotates 45° clockwise in each step.

52. (*a*) In each step, the symbols move in the sequence as shown below



53. (*a*) In each step, the cross '×' moves one space clockise and the dot moves one space anti-clockwise.The central element changes from triangle to square in one step and from square to triangle in the next step.

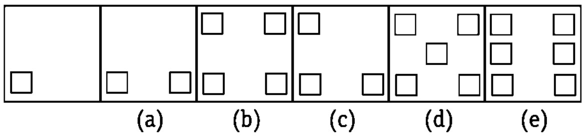
Type 3 Detection of Incorrect Order in the Series

In this type of questions, a series of six figures is given starting from unnumbered figure which is followed by five numbered figures. This series of six figures follows a certain rule if any two of the figures, except the first unnumbered figure which marks the beginning of the series, are interchanged then the earlier of these two figures is your answer and if no change is required then answer is marked as per the direction of question given.

The following examples will illustrate this type of questions

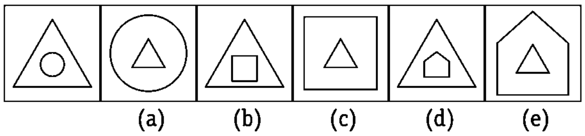
Directions (Example Nos. 29-35) Each of the following questions consists of a series of six figures; except the first figure, five figures are marked as (a), (b), (c), (d) and (e). Out of these five figures, position of two figures are interchanged. The number of first of these two figures is your answer. If no figure needs to be interchanged, then your answer is (e).

Ex 29



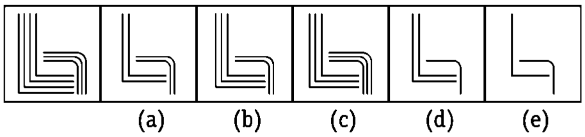
Sol. (*b*) The number of squares is increasing by one in each step. In order to establish such series, figure (b) and (c) are interchanged.

***Ex* 30**



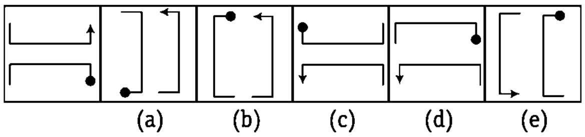
Sol. (*e*) In all the steps outer element is lost and inner element enlarges to becomes the outer element of next figure and a small element appears as the inner element.

***Ex* 31**



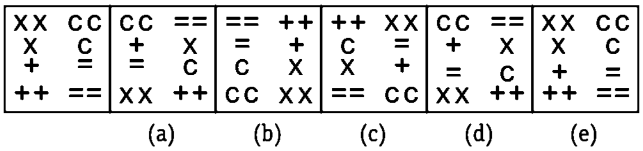
Sol. (*a*) In each subsequent step, one of the 'L' shaped component is eliminated and in the next step one of the curved line is removed.

***Ex* 32**



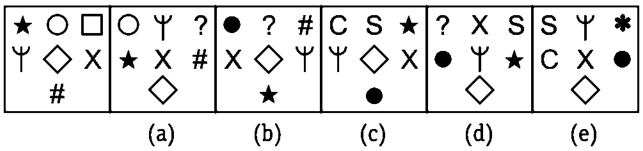
Sol. (*c*) The bent arrow rotates 90° anti-clockwise and moves to the adjacent side of the square boundary in clockwise direction in first, third, fifth, ...steps. The bent pin rotates 90° clockwise and moves to the adjacent side clockwise in one step and gets rotated through 180° in the next step. Figures (c) and (d) have to be interchanged, so as to establish this series.

***Ex* 33**

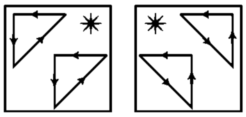


Sol. (*d*) Outer signs in pairs rotate 90° anti-clockwise and inner signs rotate 90° clockwise in each successive figure. Therefore, if figures (d) and (e) are interchanged, the series is completed.

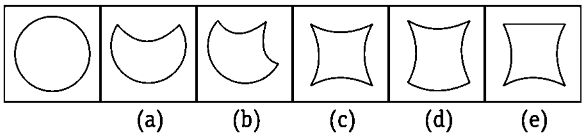
***Ex* 34**



Sol. (*c*) Symbols change their positions as shown in the two diagrams alternatively and symbol in place of ✶ is replaced by a new symbol. Therefore, on interchanging figures (c) and (d), a correct series is established.



***Ex* 35**



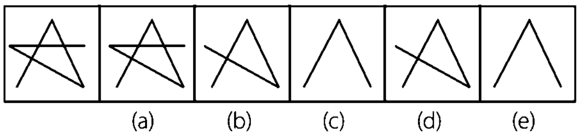
Sol. (*c*) In step (a), one-fourth part of the circumference of the circle turns inside. Once all the four parts have turn inside, these curves change into straight lines one by one. This series is established, if figure (c) and (d) are interchanged.

Practice Corner **1.3**

Build your Confidence...

Directions (Q. Nos. 1-33) Each of the following questions consists of six figures, the first of which is unmarked and marks the beginning of the series continued in the successive figures marked as (a), (b), (c), (d) and (e). However, the series will be established only, if the positions of two of the marked figures are interchanged. The number of the first of the two figures is your answer. If no figures needs to be interchanged, then your answer is (e).

1.



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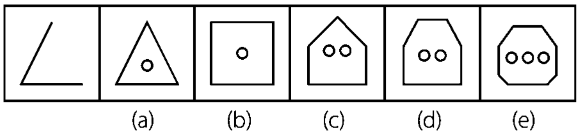

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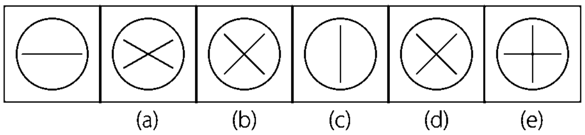

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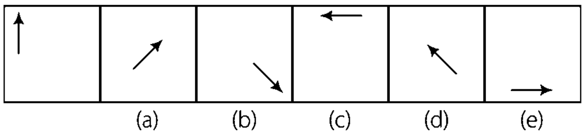

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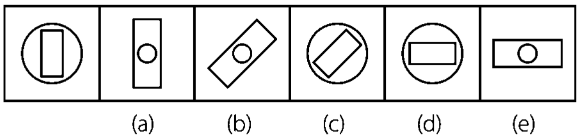

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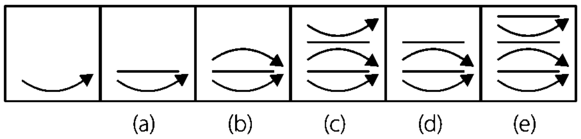

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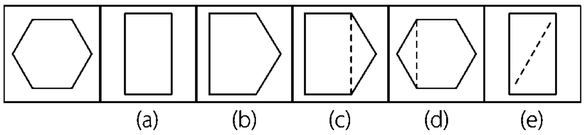

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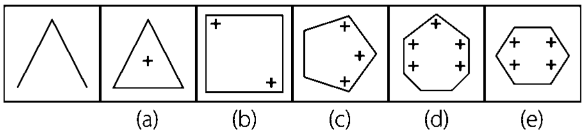

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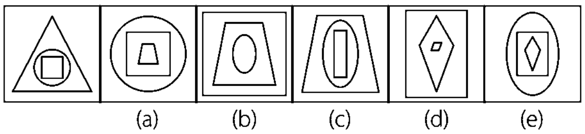

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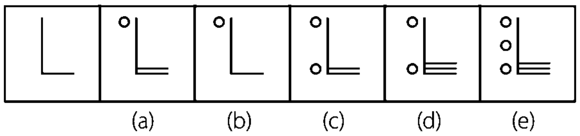

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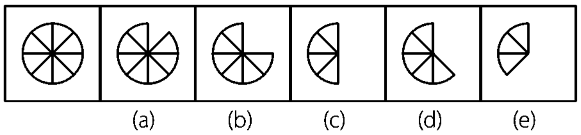

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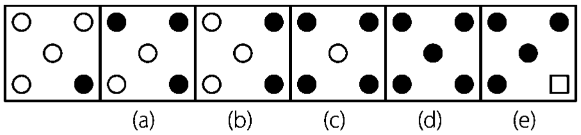

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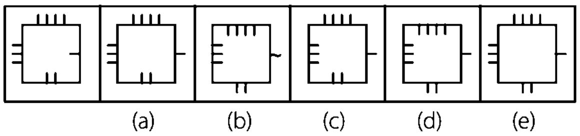

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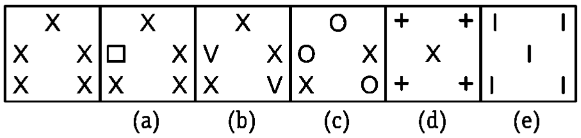

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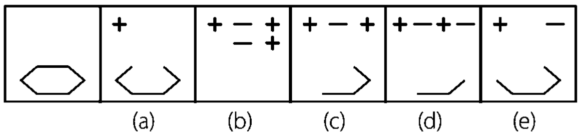

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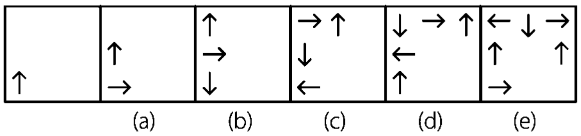

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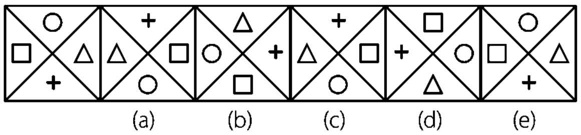

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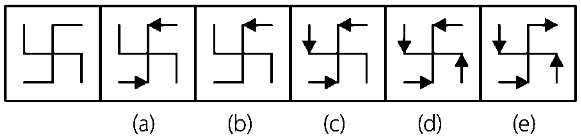

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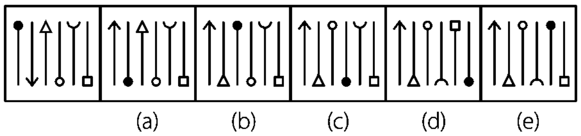

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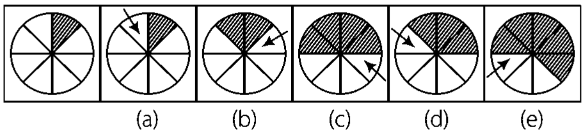

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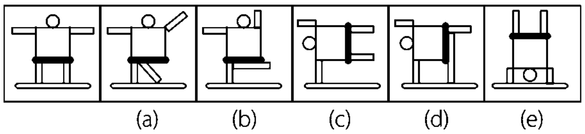

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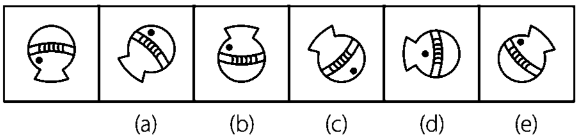

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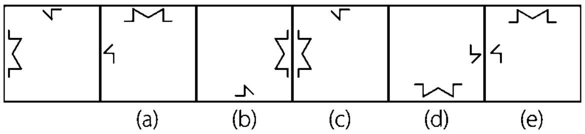

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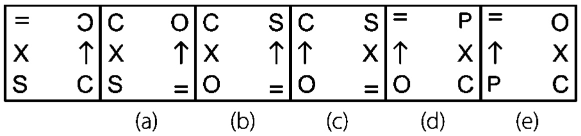

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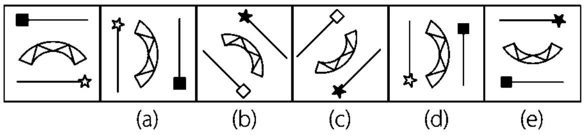

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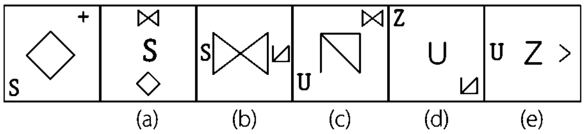

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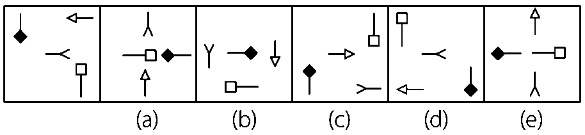

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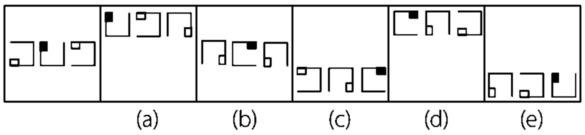

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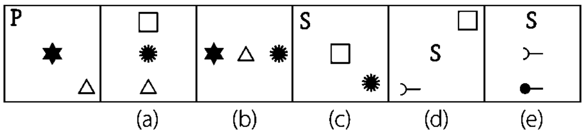

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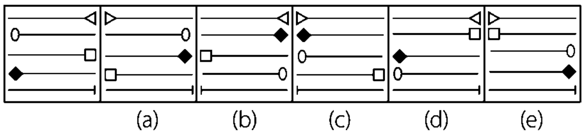

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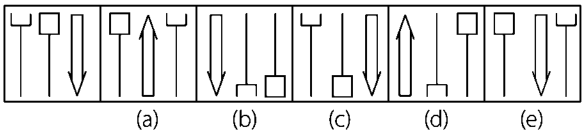

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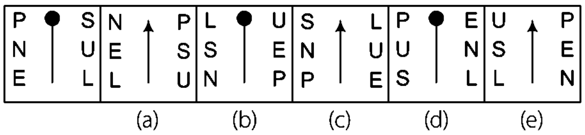
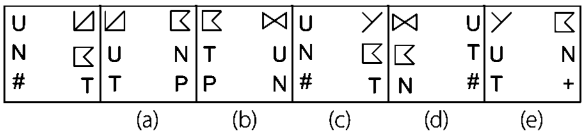


33.



Response & Interpretations **(1.3)**

1. (*c*) In the series, it is clear that two consecutive figures are identical. Hence, if figures (c) and (d) are interchanged, a series is established.

2. (*e*) One line is added to each of the successive figures and one small circle is added after every second figure.

3. (*e*) The horizontal coincident lines gradually diverge out and finally coincide vertically and then again diverge out sequentially.

4. (*d*) This series is established if figure (d) and (e) are interchanged because the arrow in the square rotates 45°, 90°, 135°, 180° and 225° clockwise.

5. (*b*) In the first step, the inner figure and the outer figure interchange their positions and size as well. In the second step, they interchange positions and size and the figure rotates 45° clockwise. Then, the whole process repeats. If figures (b) and (c) are interchanged, a series is established.

6. (*c*) One line and arrow are added one by one in each of the successive figures. If figures (c) and (d) are interchanged, a series is established.

7. (*a*) In step (a), a dotted line is formed in the existing figure and in the next step, the figure divides at the dotted line and the smaller of the two parts is lost. Figure (a) and (d) are interchanged to establish the series.

8. (*d*) In each step, the number of sides and the number of plus (+) signs is increasing by one. To establish the perfect sequence in the series, figure (d) and (e) need to be interchanged.

9. (*d*) The middle element becomes the outermost element, the innermost element becomes the middle element and a new element appears as the innermost element.

10. (*a*) One circle and one line are added to each of the alternate successive figures. Hence, figures (a) and (b) will be interchanged to complete the series.

11. (*c*) One division of the circle is removed one by one in successive figures. Hence, figures (c) and (d) have to be interchanged to complete the series.

12. (*a*) In each of the successive figures, one circle is shaded. After completion of one round, one by one the circles get undarked and are converted into a square. Hence, figures (a) and (b) will have to be interchanged to establish a series.

13. (*b*) Lines inside the figure come outside and those outside come inside one by one, moving in clockwise direction. After completion of one round, lines are curled. Therefore, if figures (b) and (e) are interchanged, a series is established.

14. (*e*) Each time one, two, three, …x are replaced by new signs. Hence, series does not require any change.

15. (*b*) One line is deleted from the main figure and two signs +and – are added alternatively. Therefore, by interchanging the figures (b) and (e), the series is completed.

16. (*e*) Pre-existing arrows rotate 90° clockwise in each of the successive figures and a new arrow ↑ is added in each subsequent figure.

17. (*c*) Signs, opposite to one another, interchange positions in one step and in second step all the signs rotate clockwise. These two steps are repeated alternatively. Therefore, if figures (c) and (d) are interchanged, a series is completed.

18. (*a*) One arm of the figure is converted into arrow one by one in each of the successive figures. If figures (a) and (b) are interchanged, a series is established.

19. (*d*) In each successive figure, two symbols first and second, second and third, third and fourth and so on, interchange positions one by one in such a way that the symbols that interchange positions are inverted at new positions. Hence, the correct answer is figure (d) because, if figures (d) and (e) are interchanged, a series is established.

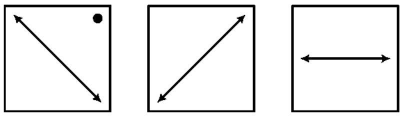
20. (*c*) An arrow appears at anti-clockwise adjacent position to the shaded portion of the circle. In each subsequent step, the part of the circle having the arrow gets shaded and the arrow moves to the other end of the shaded portions of the circle. This series is established, if figures (c) and (d) are interchanged.

21. (*c*) The gymnast initially stands with arms out stretched and legs at rest. In subsequent step, one of his arms get raised up and a leg stretched out. Then, he bends over the ground supported upon one arm and one leg. Then, he leaves the support of the leg and balances himself on one hand only. In the end, he rotates his body to display a handstand. To establish this series, figure (c) and (d) are interchanged.

22. (*b*) The figure rotates 45° clockwise in each of the successive figures. Hence, figures (b) and (d) need to be interchanged to complete the series.

23. (*c*) The smaller component rotates 90° clockwise and moves to the adjacent side of the square boundary in an anti-clockwise direction, while the larger component rotates 90° anti-clockwise and moves to the adjacent side in a clockwise direction.

24. (*e*) Only two symbols interchange positions as shown in the diagram below and a new symbol replaces the symbol in place of •. Hence, no change is required to establish a series.



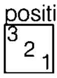
25. (*e*) The figure rotates 90° clockwise and 45° anti-clockwise. In one step, the arrow on either side of the central component get inverted, and in the next step, these arrows interchange positions and both the arrows change colour (white arrowhead turns black and black arrowhead turns white). So, in the last figure, star on line would not be black.

26. (*e*) The pattern of components of the figure rotates 45° and 90° anti-clockwise alternately. In step (a) the central element reduces in size, one of the boundary elements enlarges and interchanges position with the central component and the second boundary component is replaced by a new component.

27. (*b*) In all steps, symbols are rotating 90° clockwise; the clockwise-end component moves to the centre, the other two boundary components move three spaces in clockwise direction and the existing centre elements move to the anti-clockwise position, two spaces behind the boundary components. In order to establish this series we have to interchange figure (b) and (c).

28. (*b*) All the three components together move upwards and once they reach the topmost position, they move to the lowermost position in the next step. Also in each step the middle element moves to the LHS position; the RHS component moves to the middle position and the LHS element moves to the RHS position and rotates through 90° anti-clockwise.

29. (*a*) First of all in this type of questions, we shall number the position of components in the first unnumbered figure as

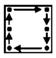
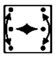


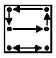
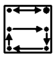
.

Then, the line of orientation of the rotation is 45° anti-clockwise and 90° anti-clockwise alternately. In each step, the elements at position 1 and 2 move to position 2 and 3 respectively; the existing component at position 3 is lost while a new component appears at position 1.

30. (*b*) The first arrow gets inverted in first, second, third…steps while the last arrows gets inverted in second, third, fourth and fifth steps. Also in first step (a), the third and fourth arrows interchange positions and get inverted and the second arrow gets inverted. In the next (b), the second and third arrows interchange positions and get inverted and the fourth arrow gets inverted. In order to establish this series, we should interchange figures (b) and (c).

31. (*a*) The RHS component moves to the LHS position in each step; the LHS component moves to middle position and middle component moves to the RHS position. The component reaching the middle and the RHS positions gets inverted. The figures (a) and (b) have to be interchanged to establish this series.

32. (*b*) The central symbol changes into an arrow and a pin alternately. Also all the remaining six letters moves in the sequences  and  alternately.

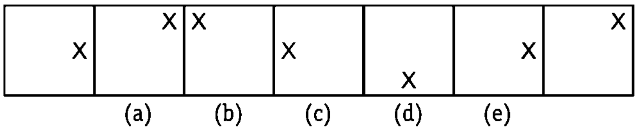
33. (*c*) The symbols move in the sequences  and  alternately. Also, in all steps, the symbol that reaches the encircled position gets changed by a new symbol/ component. Figure (c) and (d) have to interchanged to establish the series.

Type 4 Detection of Wrong Figure in the Series

In this type of questions, a series of seven figures is given. The series begins and ends with unnumbered figures. The other five figures, marked as (a, b, c, d, e), continue the series based on a certain rule. However, one of these five figures does not fit into the series.

A candidate is supposed to take as many aspects into account as possible of the figures in series and find out the one and only one of the five numbered figures which does not fit into the series. The number of that figure is the correct answer. Sometimes, in this type of questions, a series of any five marked figures is given and from among these five figures, the figure which does not fit into the series has to be found out.

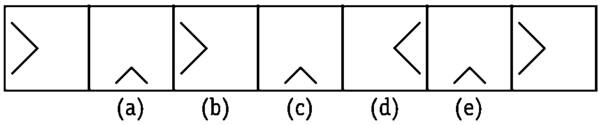
Sample of Series



The following examples will give a better idea about this type of questions

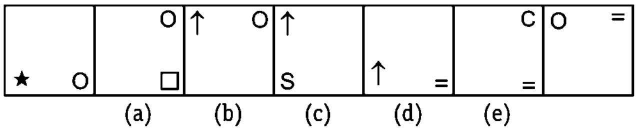
Directions (Example Nos. 36-40) Each of the following questions consists of seven figures, out of which two figures at the ends are unmarked. One of the five marked figures (a), (b), (c), (d) and (e) does not fit into the series and is your answers.

***Ex* 36**



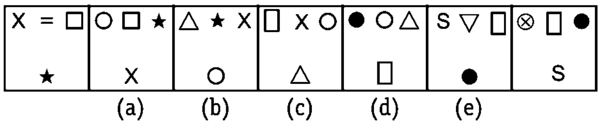
Sol. (*d*) The figure rotates one step anti-clockwise and one step clockwise alternatively in each of the successive figures.

***Ex* 37**

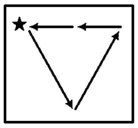


Sol. (c) In first step, the two symbols move one step in anti-clock wise direction and symbol at end gets replaced by new element. Next the first symbol does not move and second symbol moves two steps and gets replaced by new element and this process is repeated again.

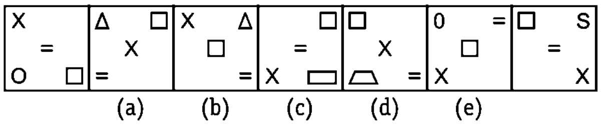
***Ex* 38**



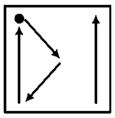
Sol. (*e*) All the symbols change positions as shown in the figure and every symbol in place ★ of is replaced by a new symbol one by one in each of the successive figures.



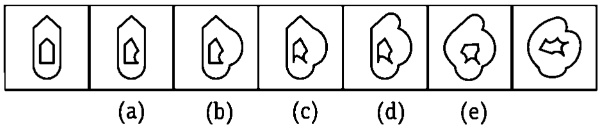
***Ex* 39**



Sol. (*b*) All the symbols change positions as shown in the diagram and the symbol in place of • is replaced by a new symbol. Subsequent figure is obtained by rotating this diagram 90° clockwise everytime.



***Ex* 40**



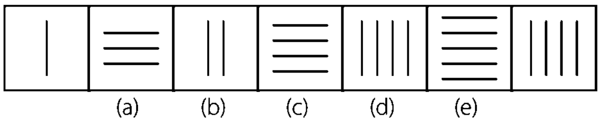
Sol. (*e*) One side of inner and outer figures is converted into arc one by one in each of the subsequent figures.

Practice Corner **1.4**

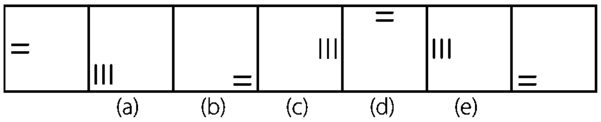
Build your Confidence...

Directions (Q. Nos. 1-39) Each of the following series consist of seven figures, two of which at the ends are unmarked. One of the five marked figures (a), (b), (c), (d) and (e) does not fit into the series. Find out the figure.

1.



2.



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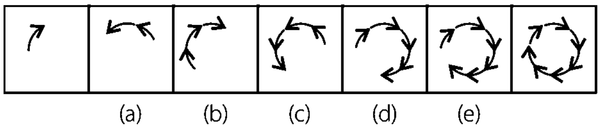

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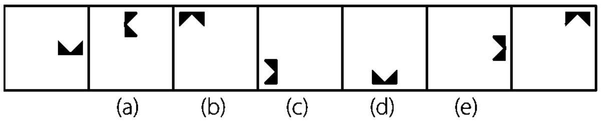

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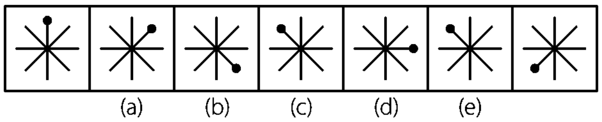

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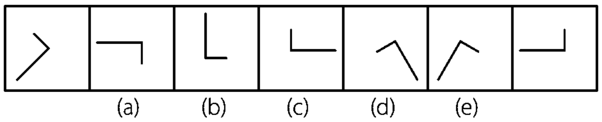

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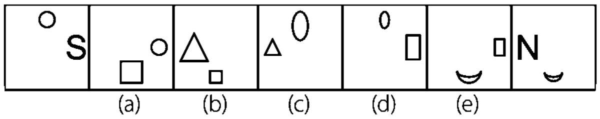

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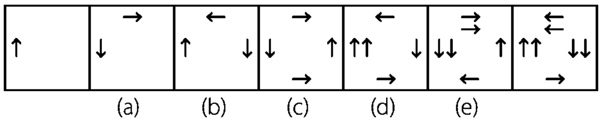

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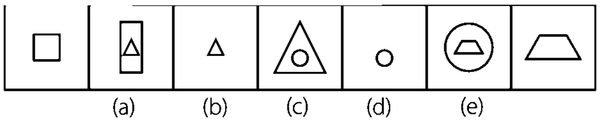

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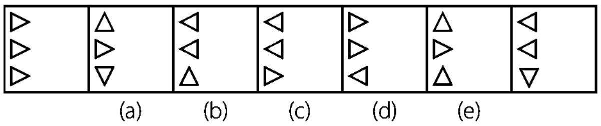

[SBI (PO) 2009]

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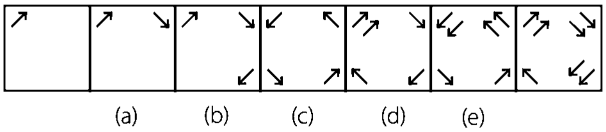

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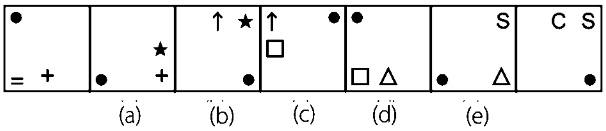

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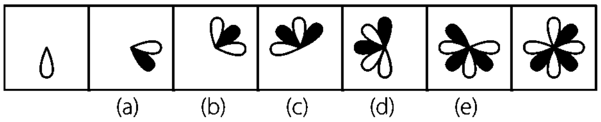

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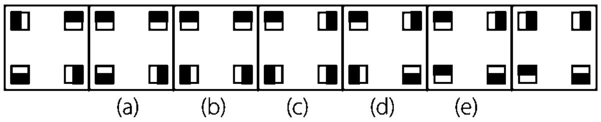

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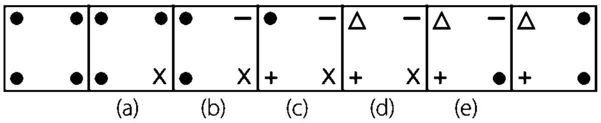

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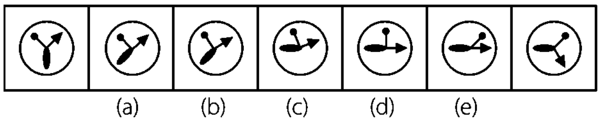

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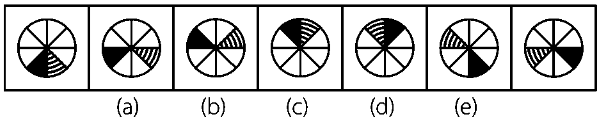

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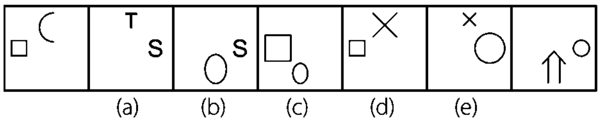

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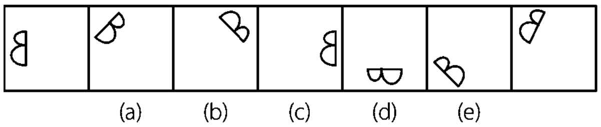

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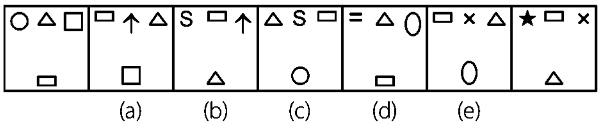

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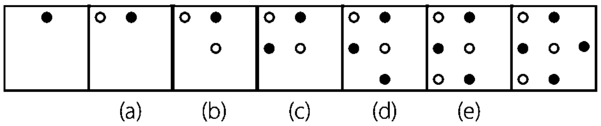

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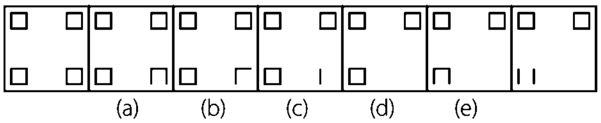

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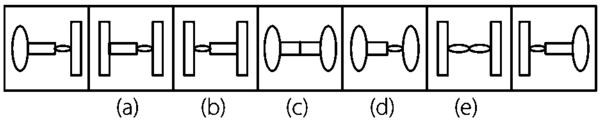

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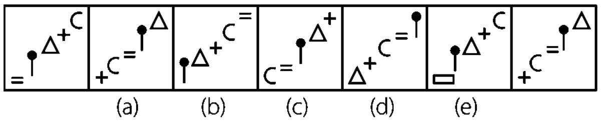
C
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C
(a)
(b)
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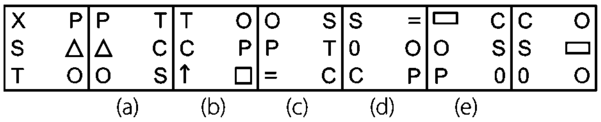
(e)

25.


X P
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T O
P T
Δ C
O S
T O
C P
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P T
S
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S
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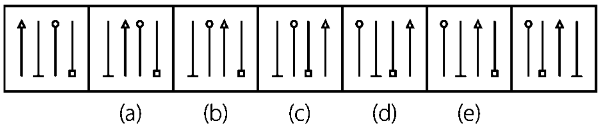
(a)
(b)
(c)
(d)
(e)

26.



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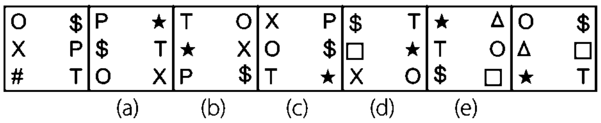
O $
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$ T
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P $
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(a)
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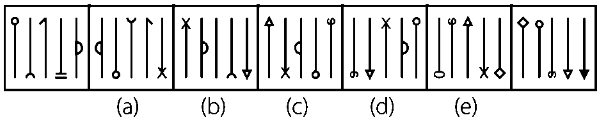
(d)
(e)

28.



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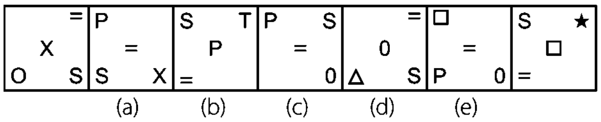

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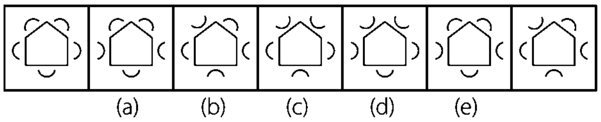

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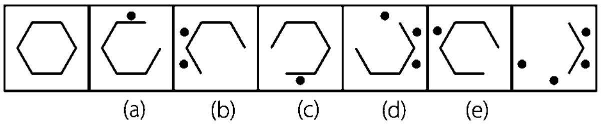

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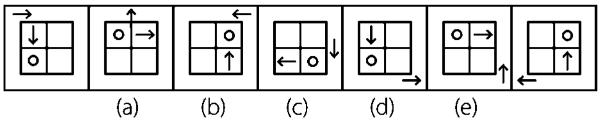

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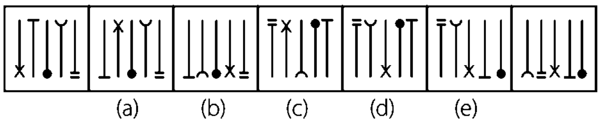

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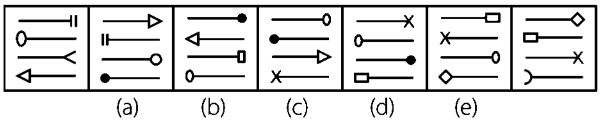

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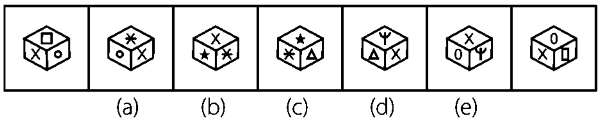

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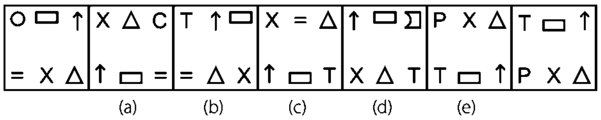

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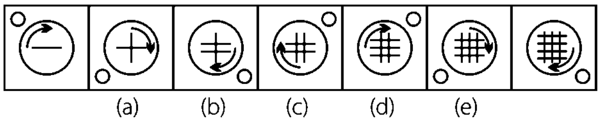

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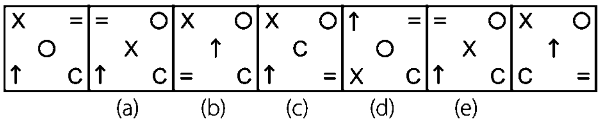

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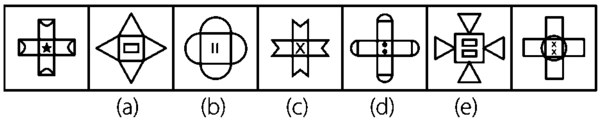


Response & Interpretations (1.4)

1. (*d*) One line is added from problem figures (0) to (b), (b) to (d) and (d) to the last figure.
2. (*e*) One line is added and deleted alternatively and all the lines move half side and one side alternatively anti-clockwise after rotating 90°.
3. (*e*) One arrow is added in each of the subsequent figures and all pre-existing arrows are reversed.
4. (*e*) Figure rotates 90° clockwise in each of the subsequent figures.
5. (*c*) The shaded circle moves 1, 2, 3, 4, … steps clockwise in each of the subsequent figures.
6. (*a*) L-shaped figure rotates 90°, 45°, 90°, … clockwise and is reversed in each figure.
7. (*a*) In each of the subsequent figures, the larger symbol becomes small and a new figure, bigger in size, comes before it.
8. (*c*) One arrow is added in clockwise direction and other arrows are reversed.
9. (*a*) In first step, the small figure becomes larger and a new figure, small in size, comes inside it. In second step, the outside larger figure is removed. The process continues.
10. (*c*) Upper triangle rotates 90° anti-clockwise, middle triangle rotates 180° after every two figures and the lower triangle rotates 90°, 180° clockwise alternatively in each of the successive figures.
11. (*a*) One arrow in clockwise direction is added in such a way that direction of the head of arrow is same as that of other arrows and at the same time all pre-existing arrows are inverted.
12. (*e*) First and second signs, counting from clockwise direction interchange positions and move one side anti-clockwise. The sign, out of these two, which comes first is replaced by a new sign. The other sign moves one side anti-clockwise in each of the successive figures.
13. (*d*) The leaf rotates by 90° anti-clockwise and one shaded leaf and blank is added alternatively in each of the successive figures.
14. (*a*) Every square rotates 90° clockwise one by one in each of the subsequent figures.

15. (*c*) In each of the subsequent figures, the circle is replaced by a new sign. When cycle completes, the circle starts reappearing in subsequent figures.

16. (*c*) Shaded leaf, arrow and pin rotate clockwise 45° one by one in each of the subsequent figures.

17. (*e*) Shaded portion moves one step clockwise and portion with lines moves one step anti-clockwise in each of the subsequent figures.

18. (*a*) In each step, the bigger element gets reduced in size and retained. The other one shifts two sides and changes its shape.

19. (*c*) In alternate steps, the whole figure rotates by 45° clockwise and 90° clockwise and gets inverted on its base.

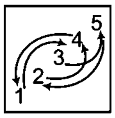
20. (*c*) In each step, the elements shift one step clockwise and one of the two elements is replaced by a new one. The triangle and the rectangle do not change shape. In figure c,'=' should come in place of circle.

21. (*b*) One blank and one shaded circle is added alternatively in each of the subsequent figures.

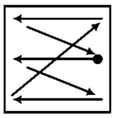
22. (*b*) One side of the square disappears from each successive figure in such a way that in the first step the bottom side, in second step the top side, in the third step the left and in last step the right sides disappear.

23. (*e*) From problem figure (0) to (a), first figure from left is changed into new figure, from problem figure (a) to (b), second and third figures from left are changed into new figures. From problem figure (b) to (c), first, second and fourth figures from the left are changed into new figures. From problem figure (c) to (d), third figure from the left is changed into a new figure. The same process is repeated in the subsequent figures.

24. (*e*) All the signs change positions as shown in the diagram. On the basis of this rule, we find that in the figure (e), sign = should come in place of sign ▭

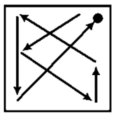


25. (*b*) Signs change positions as shown in the diagram and one symbol is replaced by a new symbol in each of the subsequent figures, starting from the symbol marked by the sign • in the diagram.

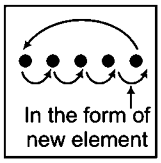


26. (*e*) First and second, second and third, third and fourth, fourth and first arrows interchange positions, one by one.

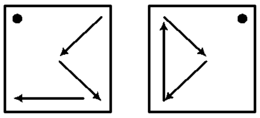
27. (*c*) Positions of all the symbols change places as shown in the diagrams, alternatively. And a new sign replaces the position marked by •.



28. (*e*) In subsequent steps the elements get changed, then placed in vertically and horizontally inverted form according to the given figure.



29. (*e*) All the symbols change their positions in two steps as shown in the diagram. Changes in the subsequent figures take place by rotating the two diagrams 180° clockwise, alternatively. A new sign replaces the symbol in place of •.



30. (*d*) In alternate steps, two and three arcs get inverted.

31. (*d*) Sides of the polygon disappear in clockwise direction in an order 1, 2, 1, 3, 1, 4, ... and the number of shaded circles appear in anti-clockwise direction in an order 1, 2, 1, 3, 1, 4, ...

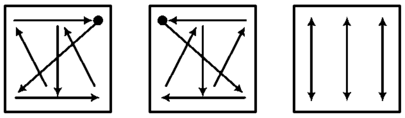
32. (*e*) Arrow outside the square moves half side and rotates 90° in anti-clockwise direction and we see that figure (e) does not follow this rule.

33. (*b*) Two figures interchange their positions and then get inverted at new positions, in a specific order.

34. (*b*) Counting from bottom, first figure replaces fourth, fourth replaces third, third replaces second and second replaces first with a new figure. Also each figure gets inverted in the new place and a new figure replaces first figure in each of the subsequent figures.

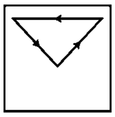
35. (*c*) In first step, two symbols on two lower adjacent sides interchange positions and the third symbol is replaced by a new symbol. The process is repeated in each subsequent figure in anti-clockwise direction.

36. (*c*) Change in the positions of symbols take place as shown in the diagrams and a new symbol replaces the positions marked by •.



37. (*d*) Small circle moves one side anti-clockwise in each of the successive figures.

38. (*d*) Three signs rotate anti-clockwise as shown in the diagram and two other signs remain the same. The process is repeated in each of the successive figures for other three symbols in anti-clockwise direction.



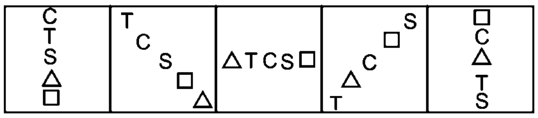
39. (*b*) Outer design on each figure starts reversing at its place from figure (d) onwards and also inner sign starts repeating in pairs from figure (d). Hence, in figure (b) outer design will be reverse of the design of the last figure.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-23) In each of the questions given below, which one of the five answer figures should come after the question figures on the right, if the sequence were continued.

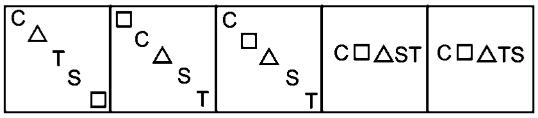
1. Question Figures


C T S △ □
T C S □ △
△TCS□
T △ C □ S
□ C △ T S

1 2 3 4 5

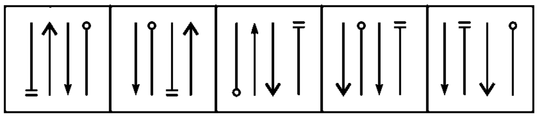
[SBI (PO) 2013]

Answer Figures


C △ T S □
□ C △ S T
C □ △ S T
C□△ST
C□△TS

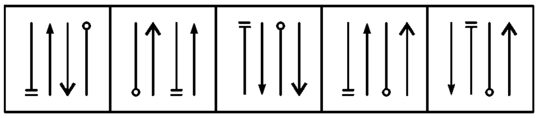
(a) (b) (c) (d) (e)

2. Question Figures



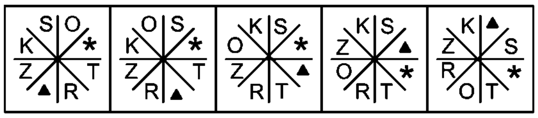
1 2 3 4 5

Answer Figures



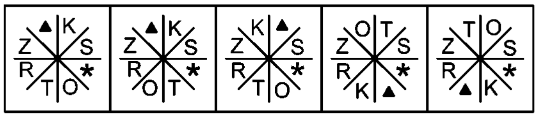
(a) (b) (c) (d) (e)

3. Question Figures


S O K * Z T ▲ R
O S K * Z T R ▲
K S O * Z ▲ R T
K S Z ▲ O * R T
K ▲ Z S R * O T

1 2 3 4 5

Answer Figures


▲ K Z S R * T O
▲ K Z S R * O T
K ▲ Z S R * T O
O T Z S R * K ▲
T O Z S R * ▲ K

(a) (b) (c) (d) (e)

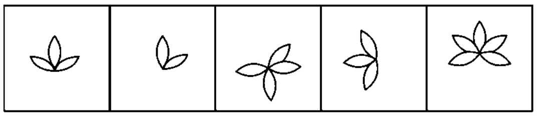
4. Question Figures

1	2	3	4	5
K = *	Z = *	△ Z *	T Z *	P T *
Z S ●	△ K ●	T = ●	P △ ●	S Z ●
△ T P	T P S	P S K	S K =	K = △

Answer Figures

(a)	(b)	(c)	(d)	(e)
S T *	S P *	△ T *	Z T R	S T ●
K P ●	K T ●	S Z ●	P △ ●	K P *
= △ Z	= △ Z	P = K	S K =	= △ Z

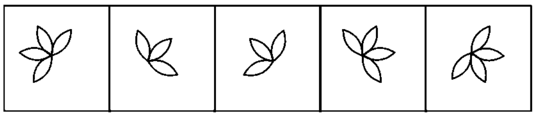
5. Question Figures



1 2 3 4 5

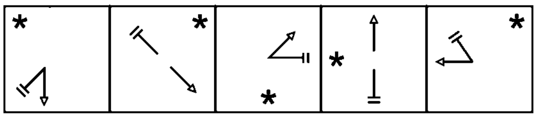
[SBI (PO) 2013]

Answer Figures



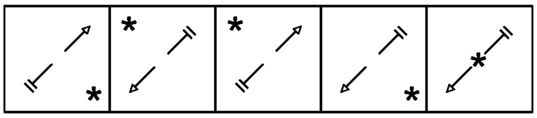
(a) (b) (c) (d) (e)

6. Question Figures



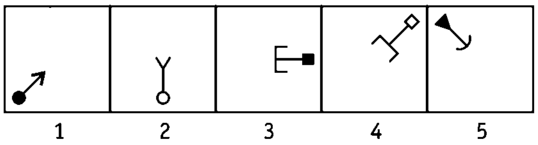
1 2 3 4 5

Answer Figures

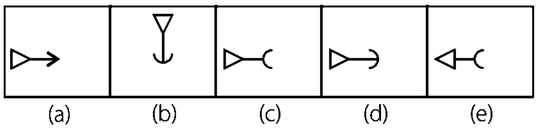


(a) (b) (c) (d) (e)

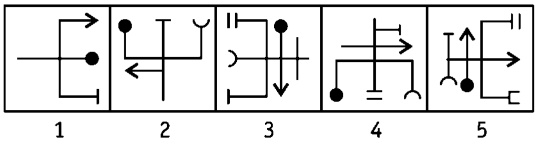
7. Question Figures



Answer Figures



8. Question Figures



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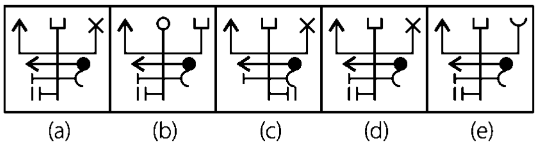
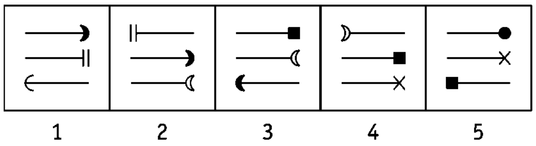
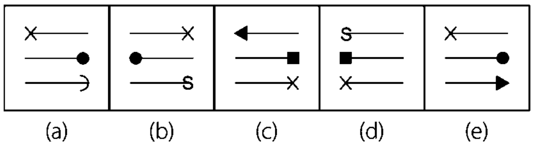


9. Question Figures

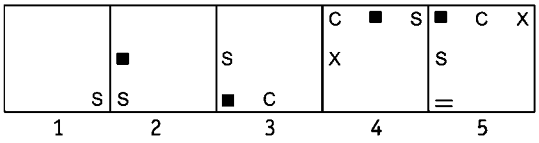


[OBC (PO) 2010]

Answer Figures



10. Question Figures


S
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=
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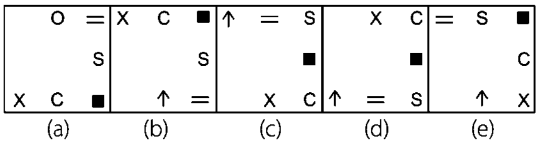
4
5

[OBC (PO) 2010]

Answer Figures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(a)
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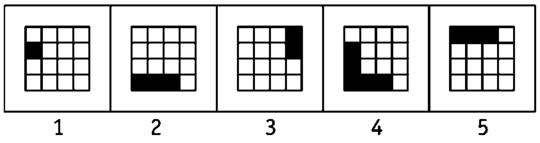
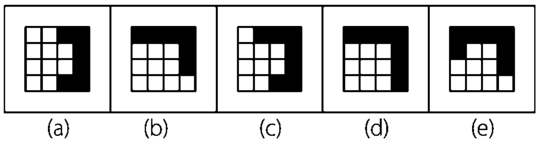
(c)
(d)
(e)

11. Question Figure

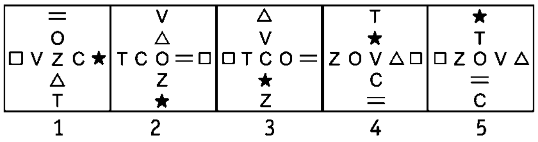


[OBC (PO) 2010]

Answer Figure



12. Question Figures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Z O V △ □
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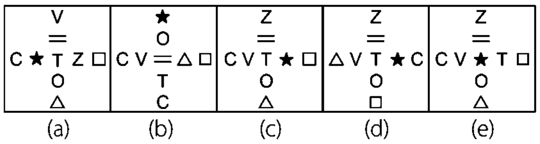
[PNB (PO) 2010]

Answer Figures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C V = △ □
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Z
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C V T ★ □
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Z
=
△ V T ★ C
O
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C V ★ T □
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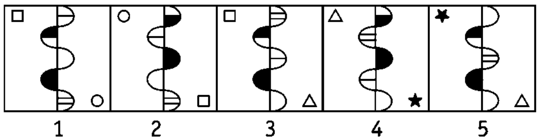
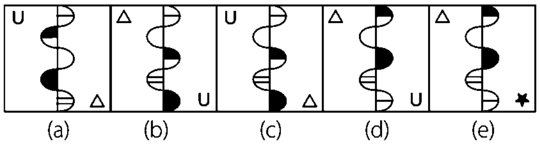
△
(a)
(b)
(c)
(d)
(e)

13. Question Figures

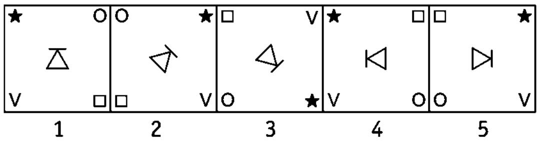


[PNB (PO) 2010]

Answer Figures



14. Question Figures


O
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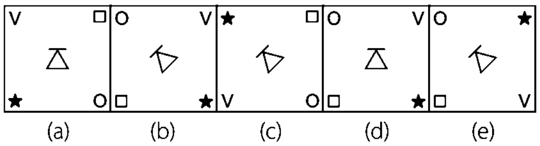
Answer Figures [PNB (PO) 2010]


V
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O
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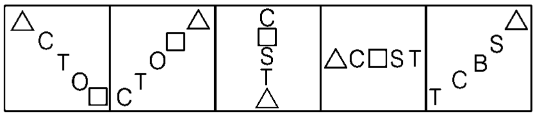
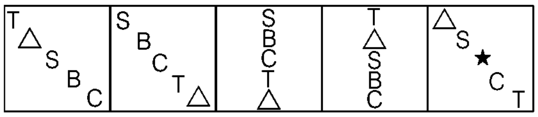
(a)
(b)
(c)
(d)
(e)

15. Question Figures

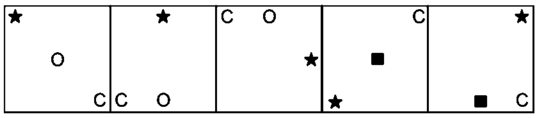


[IBPS (PO) 2012]

Answer Figures

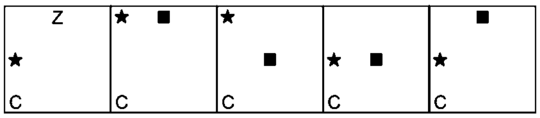


16. Question Figures

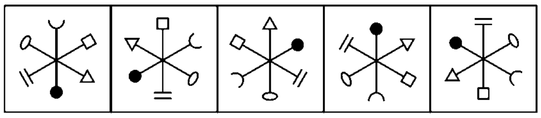


[PNB (PO) 2010]

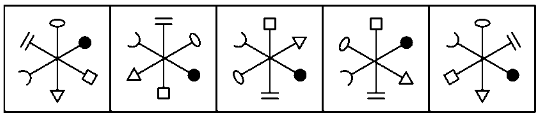
Answer Figures



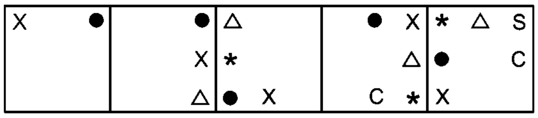
17. Question Figures



Answer Figures [CBI (PO) 2010]

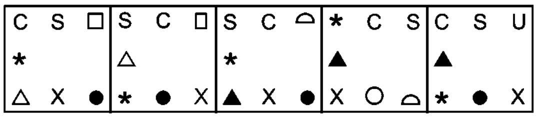


18. Question Figures

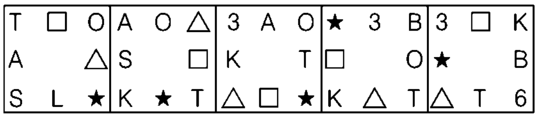


[SBI (PO) 2010]

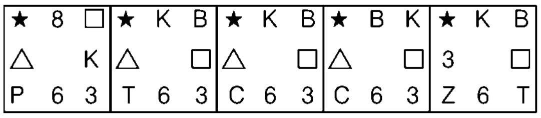
Answer Figures



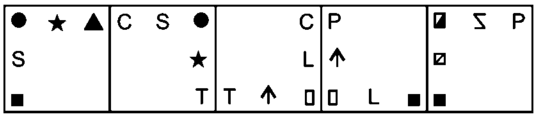
19. Question Figures



Answer Figures [IBPS (PO) 2012]

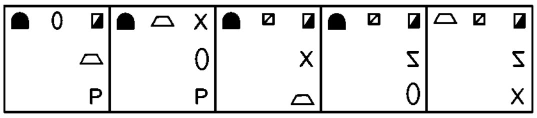


20. Question Figures

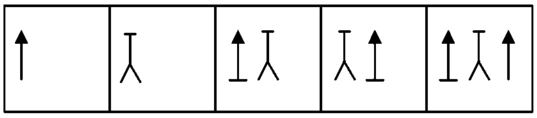


[UCO Bank (PO) 2010]

Answer Figures

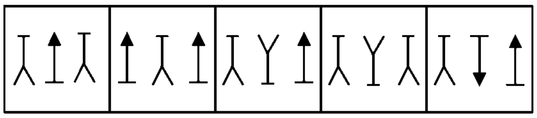


21. Question Figures

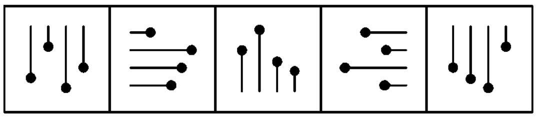


[Syndicate Bank (PO) 2010]

Answer Figures

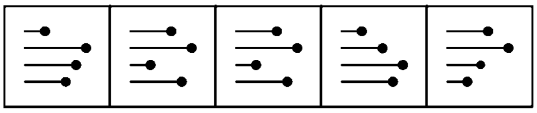


22. Question Figures

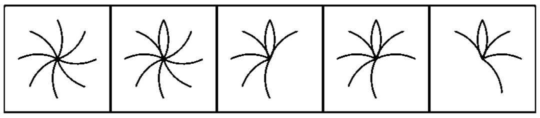


[SBI (PO) 2010]

Answer Figures

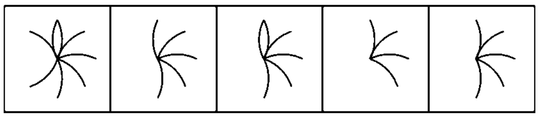


23. Question Figures



1 2 3 4 5

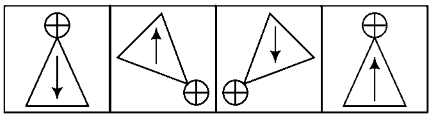
Answer Figures [CBI (PO) 2010]



(a) (b) (c) (d) (e)

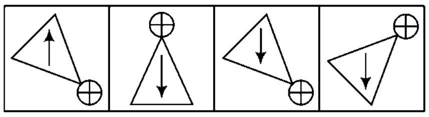
Directions (Q. Nos. 24-25) In each item, there are two set of figures; first four figures named question figures and next four figures names answer figures indicated as (a), (b), (c) and (d). The question figures follow a particular sequence. In accordance with the same, which one of the four answer figures should appear as the fifth figure?

24. Question Figures



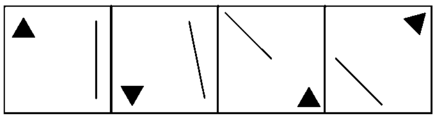
1 2 3 4 [UPSC (CSAT) 2013]

Answer Figures



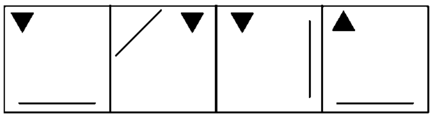
(a) (b) (c) (d)

25. Question Figures



1 2 3 4

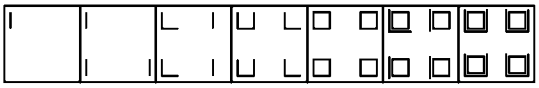
Answer Figures



(a) (b) (c) (d)

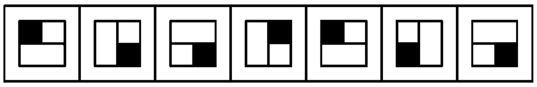
Directions (Q. Nos. 26-30) Each of the following series consist of seven figures, two of which at the ends are unmarked. One of the five marked figures (a), (b) (c), (d) and (e) does not fit into the series. Find out the figure.

26.



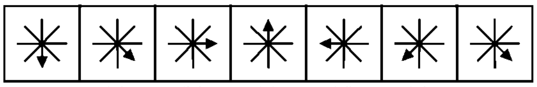
(a) (b) (c) (d) (e)

27.



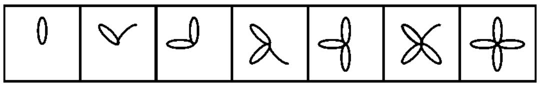
(a) (b) (c) (d) (e)

28.



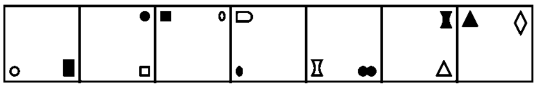
(a) (b) (c) (d) (e)

29.



(a) (b) (c) (d) (e)

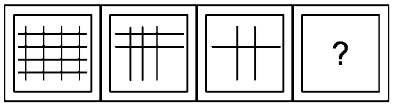
30.



(a) (b) (c) (d) (e)

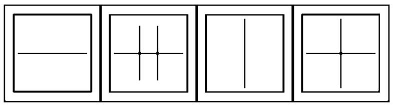
Directions (Q.Nos. 31-32) In each of the following questions, a set of four figures markded 1,2,3 and 4 forming a figure series is given out of which the last one i.e., Fig (4) is missing. Identify from the four answer figure, marked (a), (b), (c) and (d) the one which would replace the question mark (?) in fig. (4), so as to continue the series.

31. Question Figures



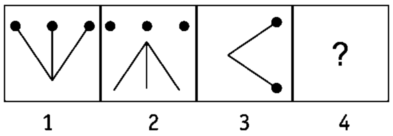
1 2 3 4 [SNAP 2012]

Answer Figures



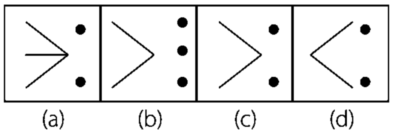
(a) (b) (c) (d)

32. Question Figures



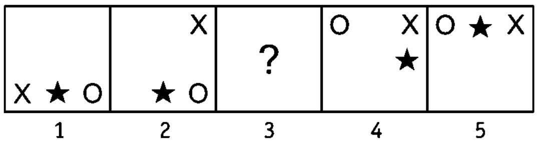
[SNAP 2012]

Answer Figures

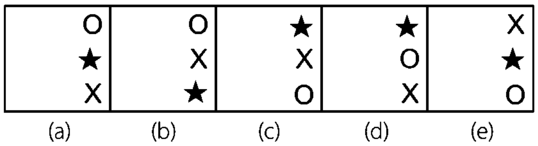


Directions (Q. Nos. 33-36) In each of the questions given below, there are two set of figures. The figures on upper side are question figures marked by numbers 1, 2, 3, 4 and 5 and on the lower side are answer figures marked by alphabets a, b, c, d and e. A series is established, if one of the five answer figures is placed in place of the sign? in the question figure. The figure from answer figures which should replace the sign? in question figures is your answer.

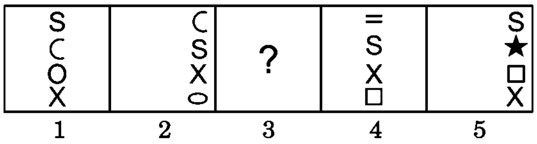
33. Question Figures



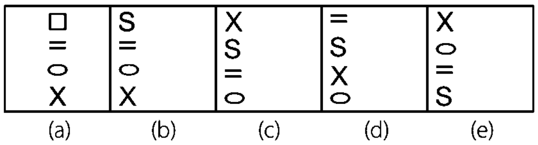
Answer Figures



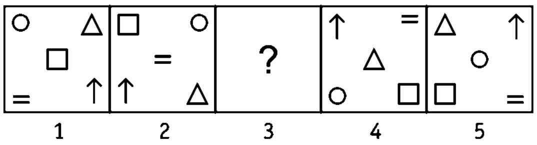
34. Question Figures



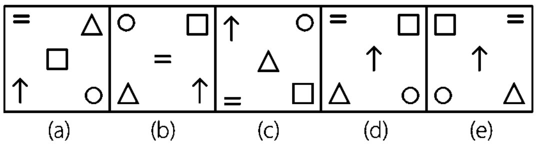
Answer Figures



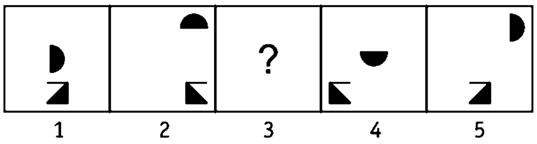
35. Question Figures



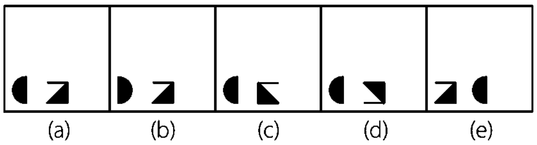
Answer Figures



36. Question Figures

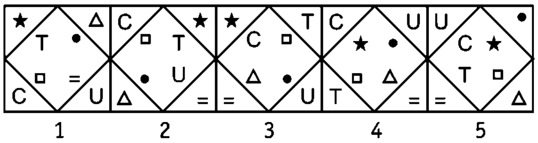


Answer Figures



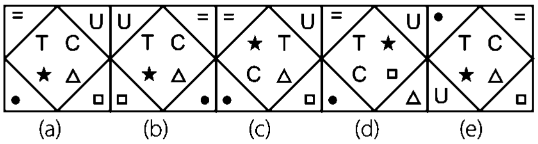
Directions (Q. Nos. 37-59) In each of the questions given below which one of the five answer figures on the lower side should come after the question figures on the upper side if the sequence were continued.

37. Question Figures

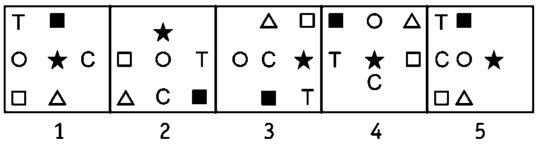


[Canara Bank (PO) 2011]

Answer Figures

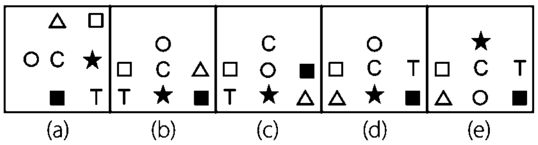


38. Question Figures

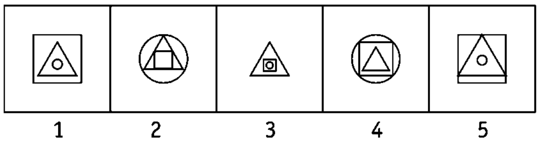


[SBI (PO) 2011]

Answer Figures

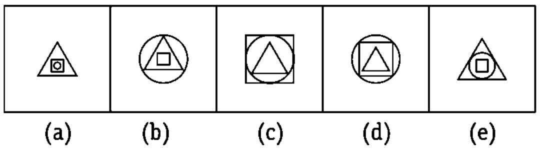


39. Question Figures

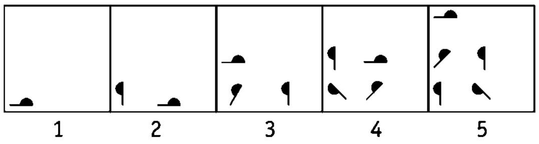


[CBI (PO) 2010]

Answer Figures

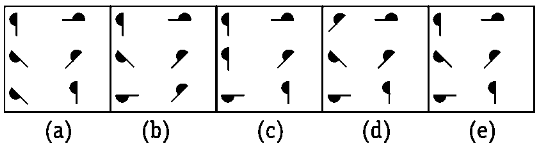


40. Question Figures

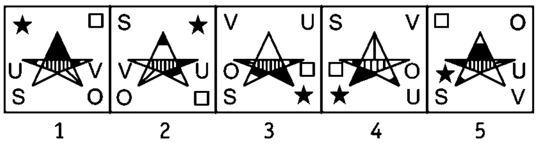


[CBI (PO) 2010]

Answer Figures

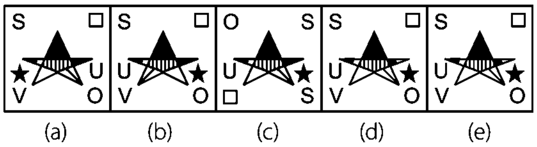


41. Question Figures

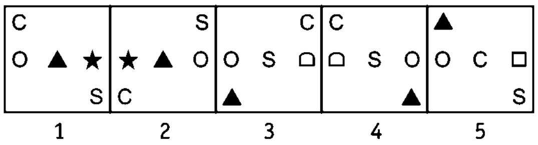


[SBI (PO) 2010]

Answer Figures

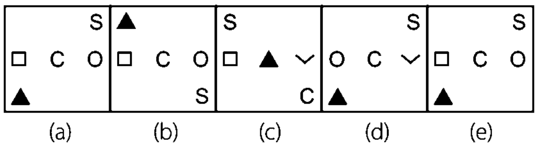


42. Question Figures

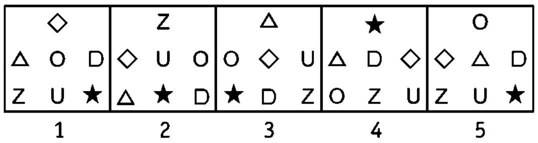


[UBI (PO) 2010]

Answer Figures

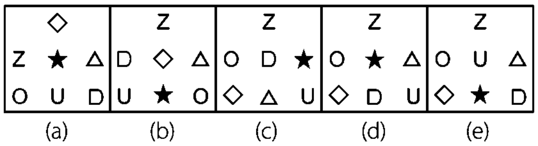


43. Question Figures

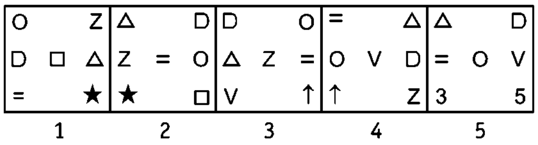


[IOB (PO) 2010]

Answer Figures

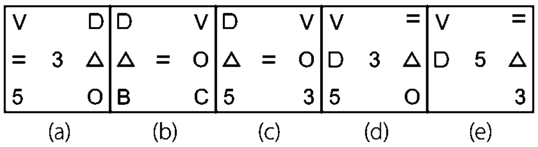


44. Question Figures

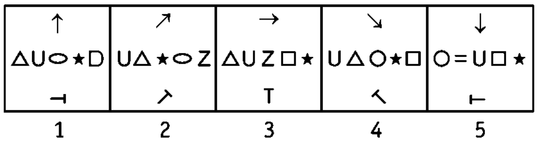


[PNB (PO) 2010]

Answer Figures

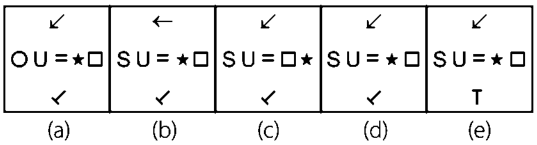


45. Question Figures

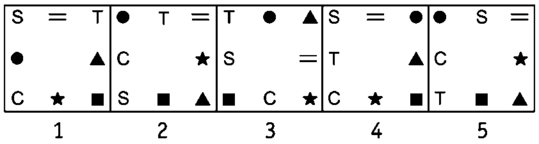


[UBI (PO) 2010]

Answer Figures

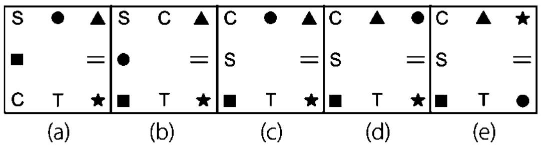


46. Question Figures

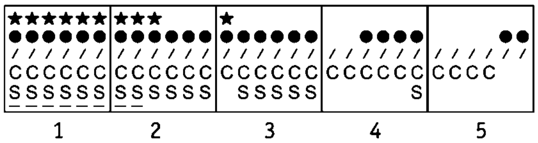


[IBPS (Clerk) 2011]

Answer Figures

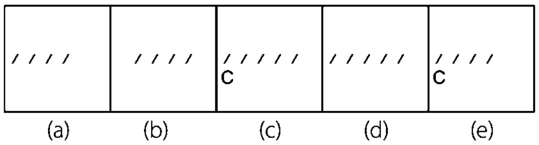


47. Question Figures

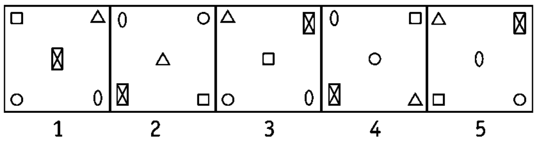


[IBPS (Clerk) 2011]

Answer Figures

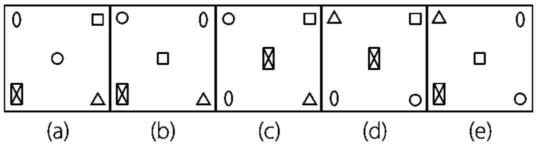


48. Question Figures

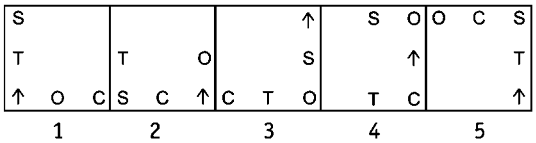


[IBPS (Clerk) 2011]

Answer Figures

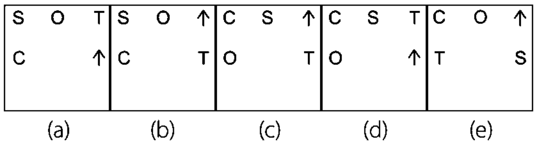


49. Question Figures

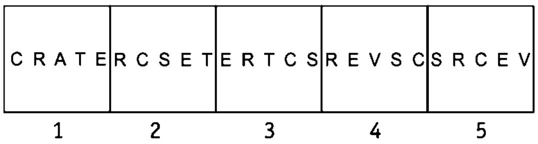


[IBPS (Clerk) 2011]

Answer Figures

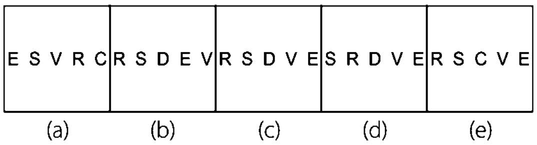


50. Question Figures

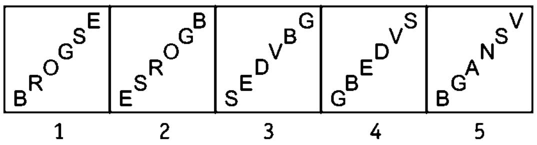

C R A T E
R C S E T
E R T C S
R E V S C
S R C E V
1
2
3
4
5

[BIO (Clerk) 2010]

Answer Figures

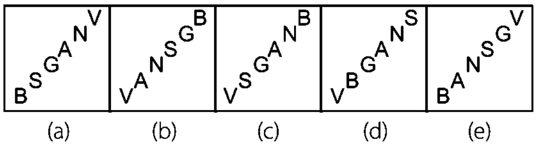

E S V R C
R S D E V
R S D V E
S R D V E
R S C V E
(a)
(b)
(c)
(d)
(e)

51. Question Figures

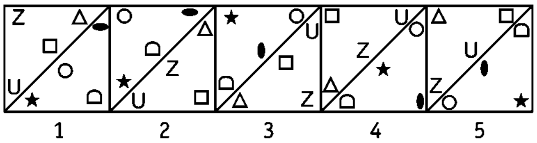


[BOB (PO) 2010]

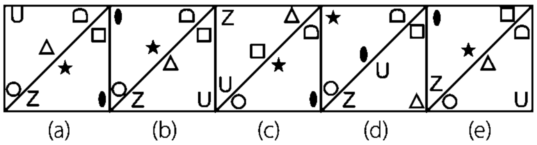
Answer Figures



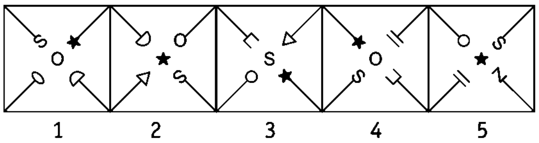
52. Question Figures



Answer Figures

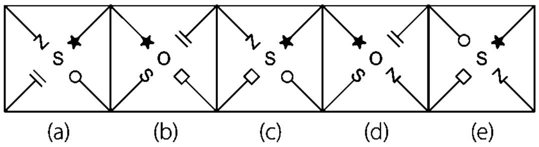


53. Question Figures

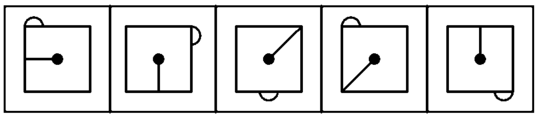


[BIO (Clerk) 2010]

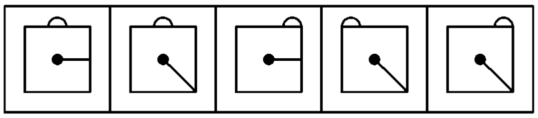
Answer Figures



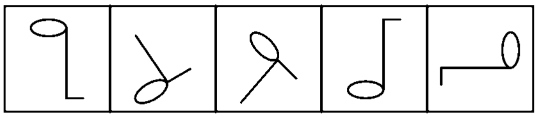
54. Question Figures



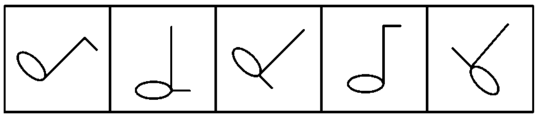
Answer Figures



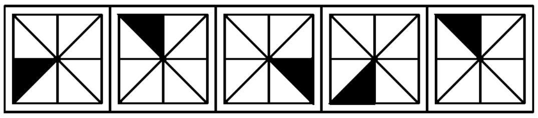
55. Question Figures



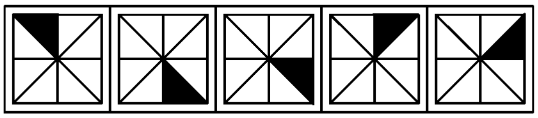
Answer Figures



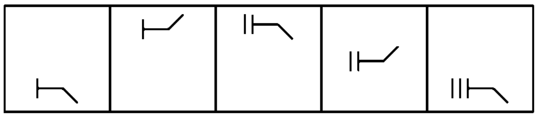
56. Question Figures



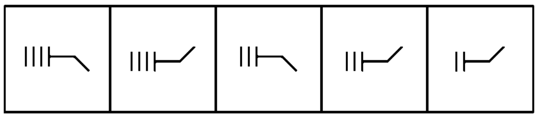
Answer Figures



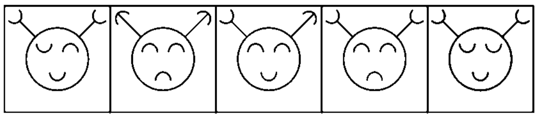
57. Question Figures



Answer Figures

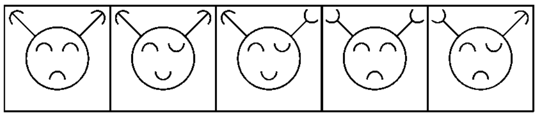


58. Question Figures

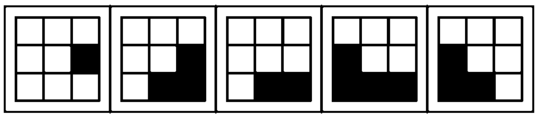


[BIO (Clerk) 2010]

Answer Figures

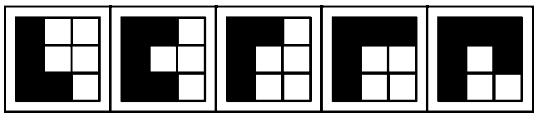


59. Question Figures



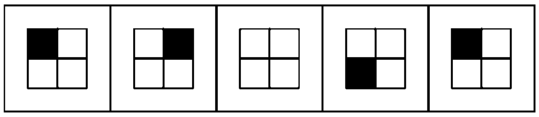
[PNB (PO) 2011]

Answer Figures

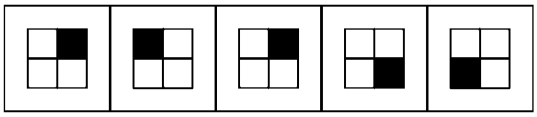


60. Which pattern from the bottom line (a, b, c, d or e) is missing from the top line? [SNAP 2007]

Question Figures

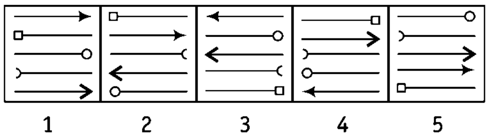


Answer Figures



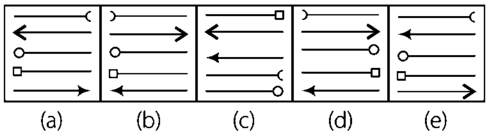
Directions (Q. Nos. 61-80) In each of the questions given below which of the five answer figures on the lower side should come after the question figures on the upper side, if the sequence were continued ?

61. Question Figures

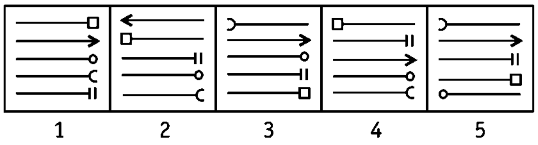


[SBI (PO) 2013]

Answer Figures

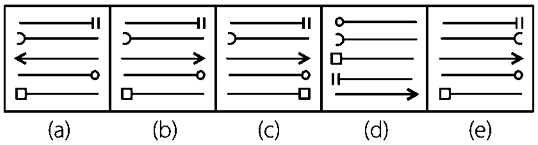


62. Question Figures

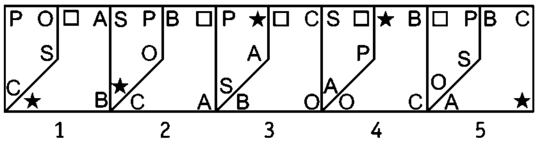


[IBPS (PO) 2012]

Answer Figures

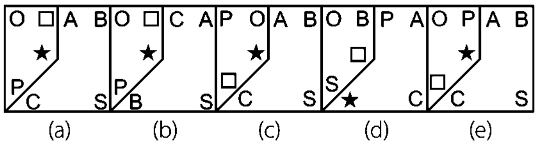


63. Question Figures

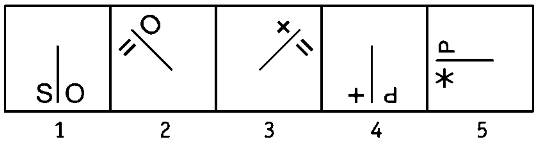

P O □ A S P B □ P ★ □ C S □ ★ B □ P B C
S O A P S
C ★ B ★ C A S B O A O C O A ★
1
2
3
4
5

[IBPS (PO) 2012]

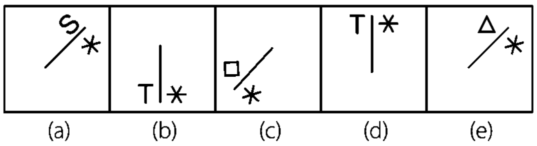
Answer Figures


O □ A B O □ C A P O A B O B P A O P A B
★ ★ ★ □ ★
P C S P B S □ C S S ★ C □ C S
(a)
(b)
(c)
(d)
(e)

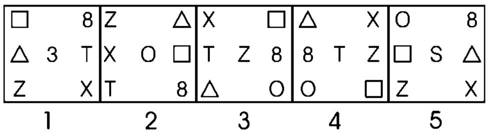
64. Question Figures



Answer Figures

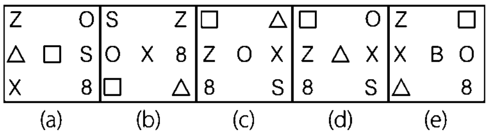


65. Question Figures

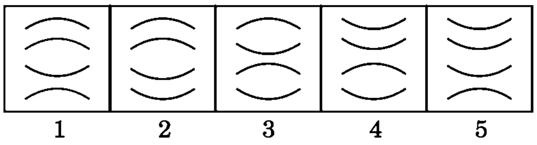

□ 8 Z △ X □ △ X O 8
△ 3 T X O □ T Z 8 8 T Z □ S △
Z X T 8 △ O O □ Z X
1
2
3
4
5

[SBI (PO)2013]

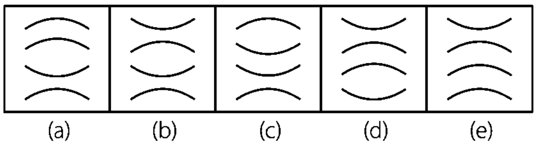
Answer Figures


Z O S Z □ △ □ O Z □
△ □ S O X 8 Z O X Z △ X X B O
X 8 □ △ 8 S 8 S △ 8
(a)
(b)
(c)
(d)
(e)

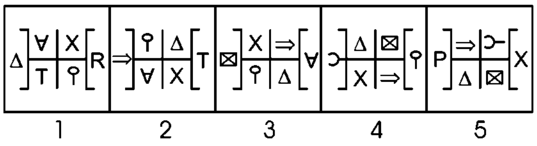
66. Question Figures



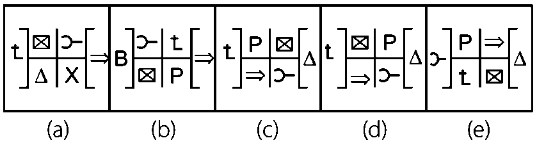
Answer Figures



67. Question Figures


△ ∀ X T ♀ R
⇒ ♀ △ ∀ X T
⊠ X ⇒ ♀ △ ∀
⊃ △ ⊠ X ⇒ ♀
P ⇒ ⊃ △ ⊠ X
1
2
3
4
5

Answer Figures


t ⊠ ⊃ △ X ⇒
B ⊃ t ⊠ P ⇒
t P ⊠ ⇒ ⊃ △
t ⊠ P ⇒ ⊃ △
⊃ P ⇒ t ⊠ △
(a)
(b)
(c)
(d)
(e)

68. Question Figures

1	2	3	4	5
M q B H	D N Y Z	q U X B	B q X U	F D Z Y
U D Z X	F M H V	D H M Z	V F Y N	H B U M
N F V Y	q U X B	F Y N V	D H M Z	q V N X

[Canara Bank (PO) 2011]

Answer Figures

(a)	(b)	(c)	(d)	(e)
q N V X	q V N X	q N V X	q V N X	q V N X
F U B Y	F U B Y	F B U Y	F B U M	F U B Y
H Z D M	H Z D M	H Z D M	H Z D Y	H D Z M

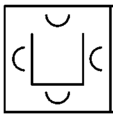
69. Question Figures

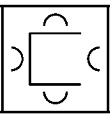
1	2	3	4	5
⇒ ■ ⬠	B q ■	■ B q	X ⇒ B	B X ⇒
X P q	Y ⇒ ⬠	⬠ Y ⇒	P ■ q	q P ■
Y M B	M X P	P M X	M ⬠ Y	Y M ⬠

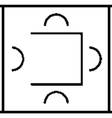
Answer Figures

(a)	(b)	(c)	(d)	(e)
⬠ ■ X	⇒ B X	⬠ X ⇒	Y M ⬠	⬠ ■ X
q B ⇒	■ q P	Y B ■	B X ⇒	Y B ⇒
Y M P	⬠ Y M	M q P	q P ■	M q P

70. Question Figures


1


2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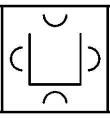
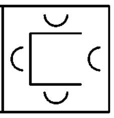
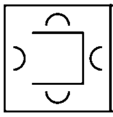
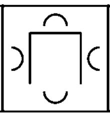

4


5

Answer Figures


(a)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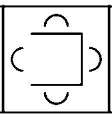
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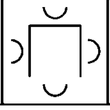
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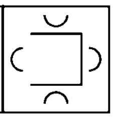
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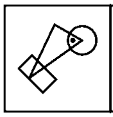
71. Question Figures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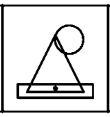
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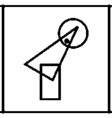
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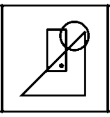
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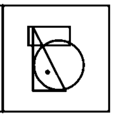
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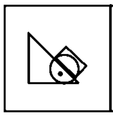
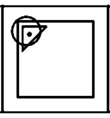
Answer Figures


(a)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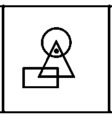
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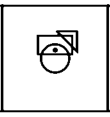
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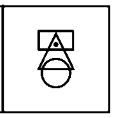

(e)

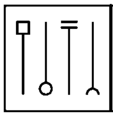
72. Question Figures

1	2	3	4	5
⊃ N ↤	↤ U И	↦ N ⊂	И ⊃ ↦	U N ↤

Answer Figures

(a)	(b)	(c)	(d)	(e)
↤ ⊃ И	↦ ⊂ И	↤ ⊂ И	↤ ⊂ N	↦ ∩ И

73. Question Figures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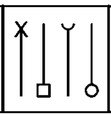
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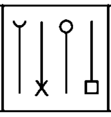
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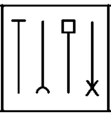
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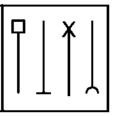
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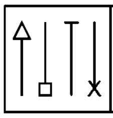
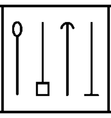
Answer Figures


(a)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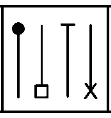
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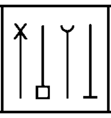
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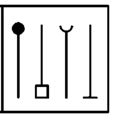

(e)

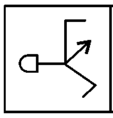
74. Question Figures

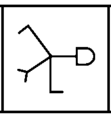
1	2	3	4	5
= ■ S	S △ =	= S △	△ ★ =	= △ ★
△ ○	★ ■	★ ■	P S	P S
⌂ ★ P	P ○ ⌂	⌂ P ○	○ ■ ⌂	⌂ ○ ■

Answer Figures

(a)	(b)	(c)	(d)	(e)
= P ★	★ = △	★ S =	★ P =	⌂ P =
○ △	P S	△ ○	○ △	○ △
⌂ S ■	■ ⌂ ○	■ P ⌂	■ S ⌂	■ S ★

75. Question Figures


1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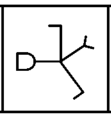
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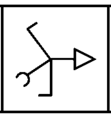
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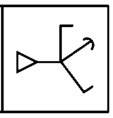
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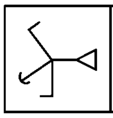
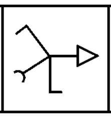
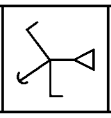
[SBI (PO) 2010]

Answer Figures


(a)


(b)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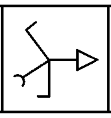
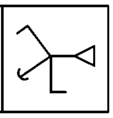

(d)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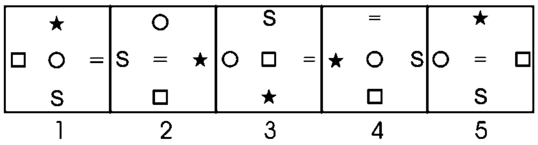
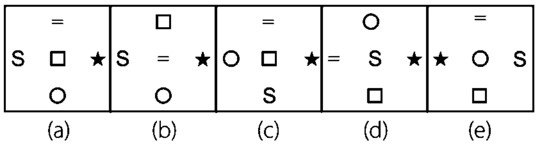
76. Question Figures

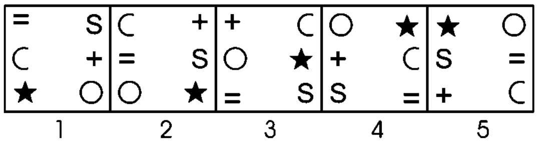


[UBI (PO) 2010]

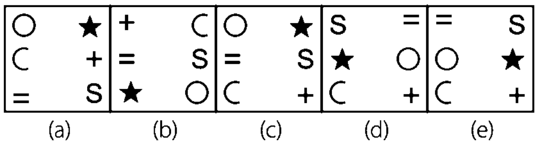
Answer Figures



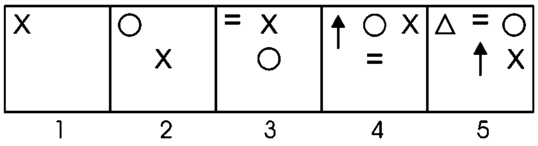
77. Question Figures



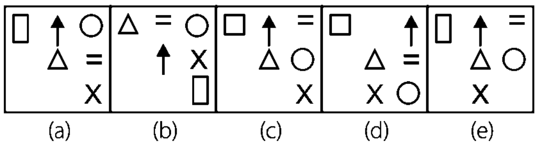
Answer Figures



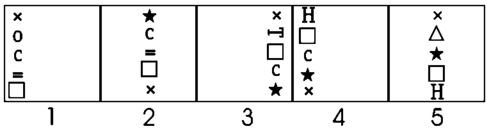
78. Question Figures



Answer Figures

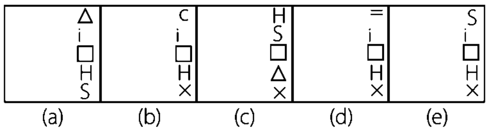


79. Question Figures

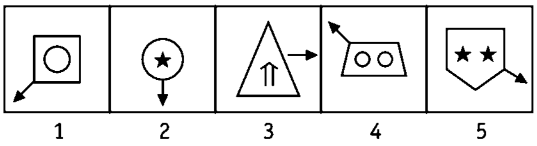


[IBPS (PO) 2011]

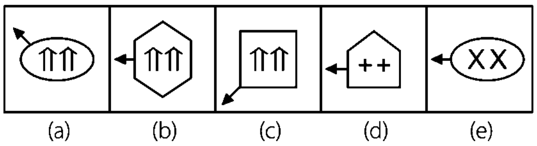
Answer Figures



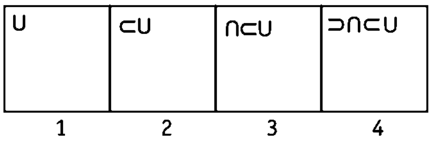
80. Question Figures



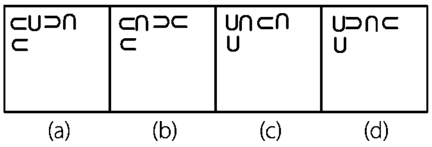
Answer Figures



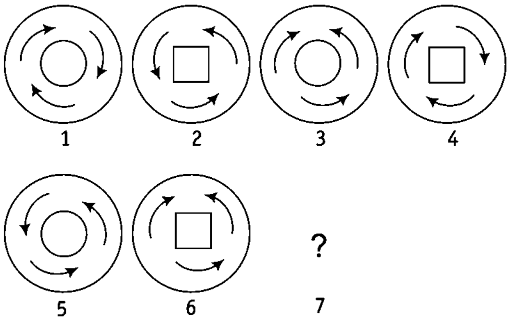
81. Question Figures



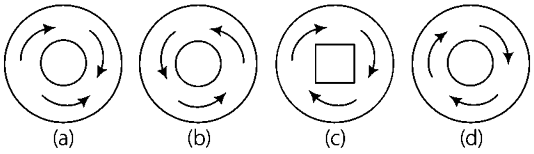
Answer Figures



82. Consider the following figures

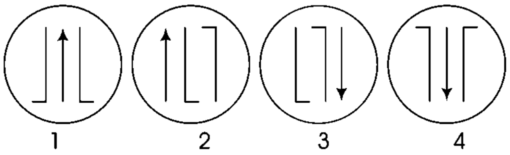


Which one of the following figures would logically come in the 7th position indicated above by a questions mark? [UPSC (CSAT) 2013]



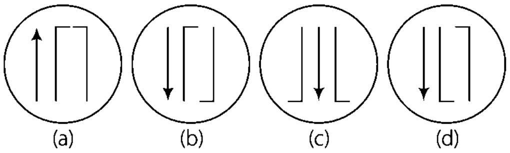
Directions (Q. Nos. 83-84) In each item, there are two set of figures, first four figures named question figures and next four figures named answer figures and indicated as (a), (b), (c) and (d). The question figures follow a particular sequence. In accordance with the same, which one of the four answer figures should appear as the fifth figure?

83. **Question Figures**

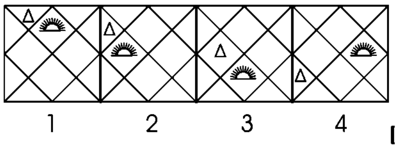


[UPSC (CSAT) 2013]

Answer Figures

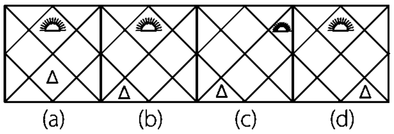


84. **Question Figures**



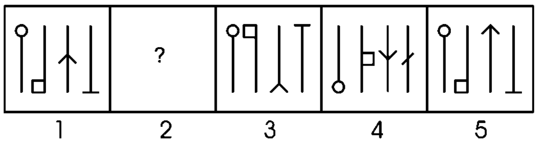
[UPSC (CSAT) 2013]

Answer Figures

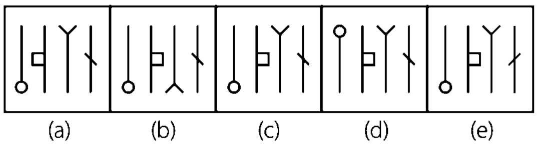


Directions (Q. Nos. 85-91) In each of the questions, there are two sets of figures. The figures on upper side are question figures marked by numbers 1, 2, 3, 4 and 5 and on the lower side are answer figures marked by alphabets a, b, c, d and e. A series is established, if one of the five answer figures is placed in place of the sign? in the question figures. The figure from answer figures which should replace the sign ? in question figures is your answer.

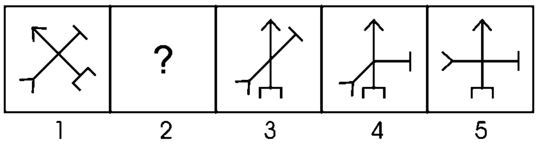
85. **Question Figures**



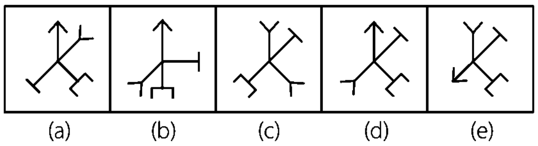
Answer Figures



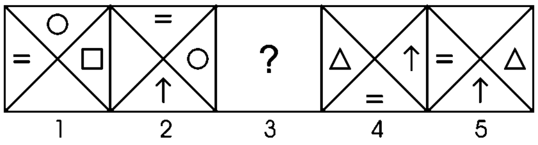
86. **Question Figures**



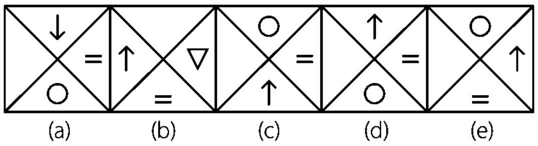
Answer Figures



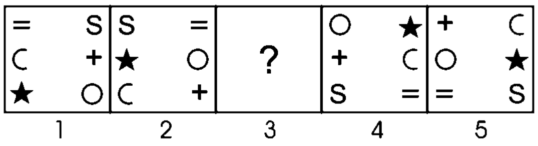
87. **Question Figures**



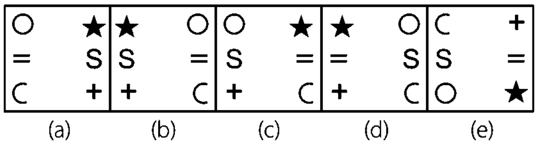
Answer Figures



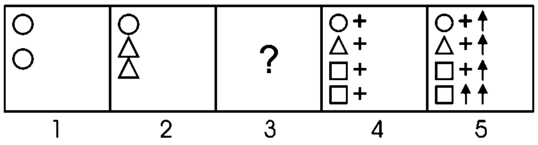
88. **Question Figures**



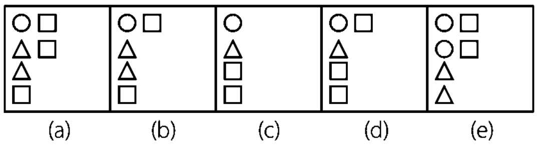
Answer Figures



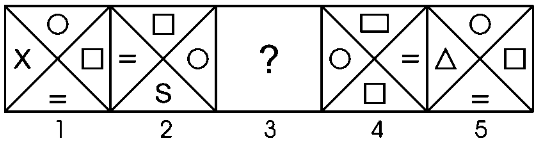
89. **Question Figures**



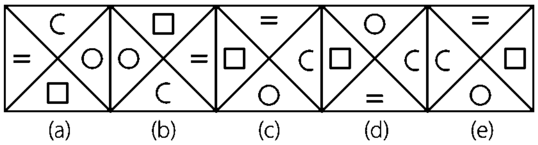
Answer Figures



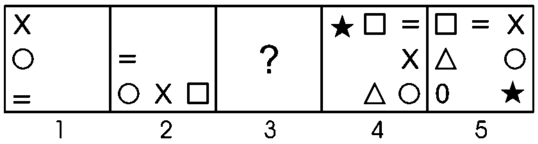
90. Question Figures



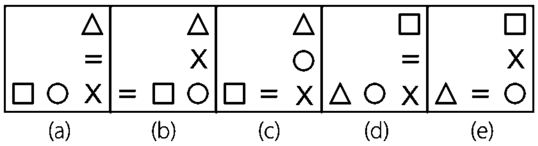
Answer Figures



91. Question Figures

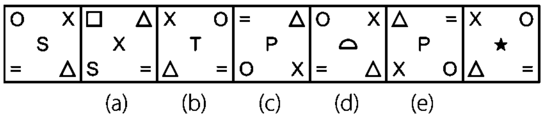


Answer Figures

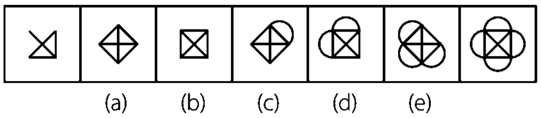


Directions (Q. Nos. 92-96) Each of the following series consists of seven figures, two of which at the ends are unmarked. One of the five marked figures (a), (b), (c), (d) and (e) does not fit into the series. Find out the figure.

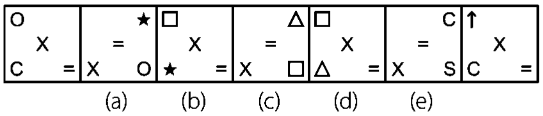
92.



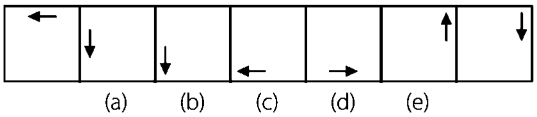
93.



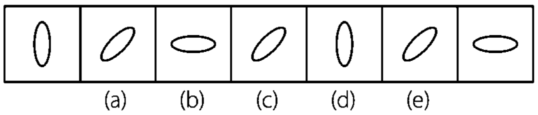
94.



95.

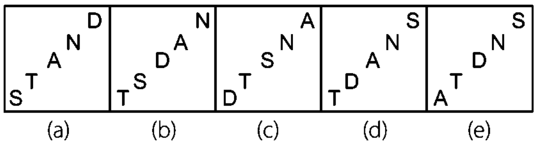


96.

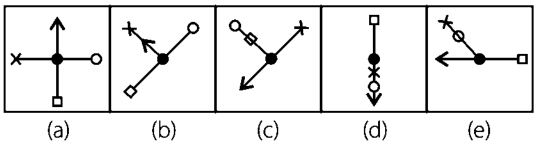


Directions (Q. Nos. 97-98) In each of the following questions below, the figures follow a series/sequence. One and only one out of the five figures does not fit in the series/sequence. The number of that figure is your answer.[IBPS (PO) 2012]

97.

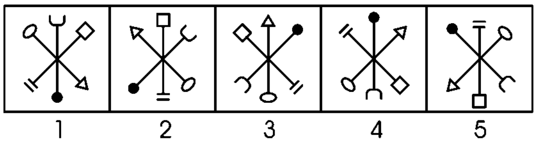

D N A T S
N A D S T
A N S T D
S N A D T
S N D T A
(a)
(b)
(c)
(d)
(e)

98.



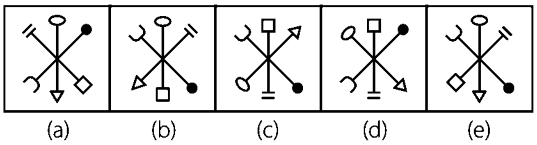
Directions (Q. Nos. 99-108) In each of the questions given below which of the five answer figures on the lower side should come after the question figures on the upper side, if the sequence were continued?

99. Question Figures

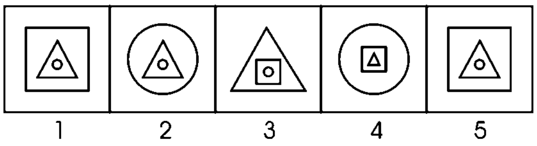


[PNB (PO) 2010]

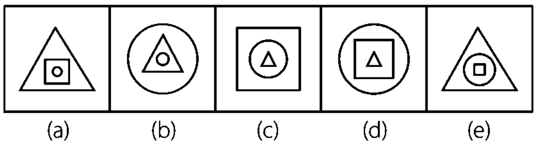
Answer Figures



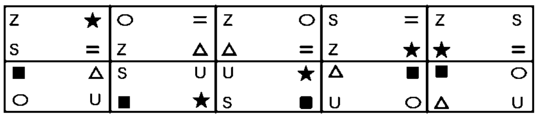
100. Question Figures [BOB (PO) 2010]



Answer Figures



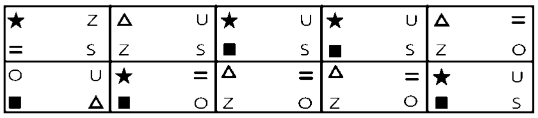
101. Question Figures



1 2 3 4 5

[UBI (PO) 2010]

Answer Figures



(a) (b) (c) (d) (e)

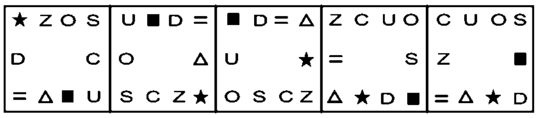
102. Question Figures [Canara Bank (PO) 2010]

1	2	3	4	5
ROUSE	OBSDE	EDSBO	DPBVO	OVBPD

Answer Figures

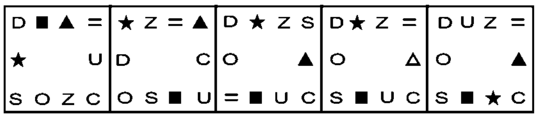
(a)	(b)	(c)	(d)	(e)
WOXBD	VWPXD	VWXPD	VOPXD	VWPBD

103. Question Figures [IOB PO 2010]



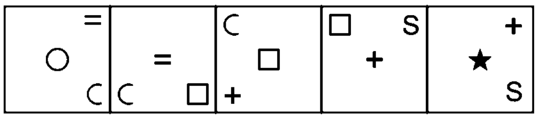
1 2 3 4 5

Answer Figures



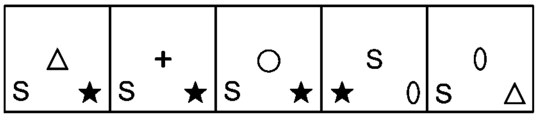
(a) (b) (c) (d) (e)

104. Question Figures



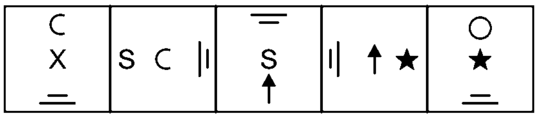
1 2 3 4 5

Answer Figures



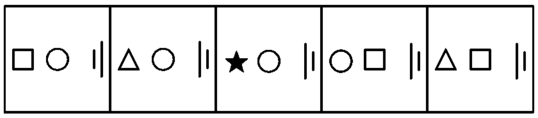
(a) (b) (c) (d) (e)

105. Question Figures



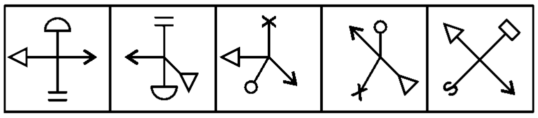
1 2 3 4 5

Answer Figures



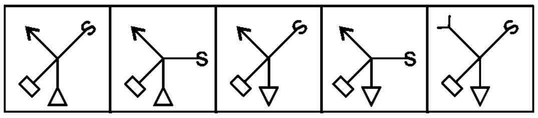
(a) (b) (c) (d) (e)

106. Question Figures



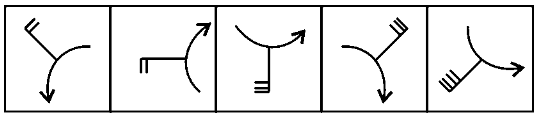
1 2 3 4 5

Answer Figures



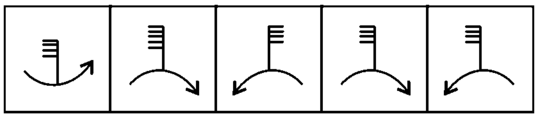
(a) (b) (c) (d) (e)

107. Question Figures



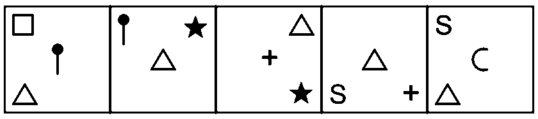
1 2 3 4 5

Answer Figures



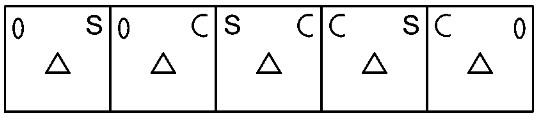
(a) (b) (c) (d) (e)

108. Question Figures



1 2 3 4 5

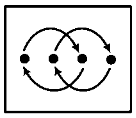
Answer Figures



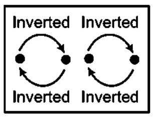
(a) (b) (c) (d) (e)

Response & Interpretations (Master Exercise)

1. (*c*) In each subsequent figure, the series of symbols move 45° anti-clockwise. With reference to the position of symbols in the original series, from question figure (1) to (2) the upper two elements at corners interchange their positions; from question figure (2) to (3), the lower most elements get shifted to the uppermost position in the series. Then, the whole process repeats. So, the answer figure must be as given in option (c).
2. (*d*) Changing pattern of position of elements from question figure (1) to (2) is similar to the changing pattern of position of elements from question figure (4) to (5). So, the changing pattern of elements from question figure (5) to (6) must be similar to the changing pattern of position of elements from question figure (2) to (3).

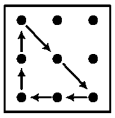


From Fig. 1 to 2
and From Fig. 4 to 5

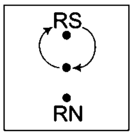


From Fig. 2 to 3
and From Fig. 5 to 6

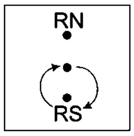
3. (*a*) From Fig. 1 to 2 → S and 0 and ▲ and R interchange places.
   From Fig. 2 to 3→ K and 0 and ▲ and T interchange places.
   From Fig. 3 to 4→ 0 and Z and * and ▲ interchange places.
   From Fig. 4 to 5→ 0 and R and S and ▲ interchange places.
   From Fig. 5 to 6→ 0 and T and K and ▲ interchange places.
4. (*a*) Changes of positions of elements from figure 1 to 2 is similar to the changes from figure 3 to 4. This pattern also follows from figure 5 to answer figure. Let us see the pattern



5. (*d*) From figure (1) to (3), the figure is inverted and one leaf is added to one of its side. Also from figure (3) to (5), the figure is again inverted and one leaf is added to its other side. Same process follows from figure (2) to (4) and from figure (4) to (6).
6. (*d*) * moves one and one-half side clockwise alternately, ⊥ rotates by 90° and 135° alternately (clockwise), ↓ rotates by 45° and 90° alternately (anti-clockwise)
7. (*c*) From figure (1) or (2) main figure rotates through an angle of 45° anti-clockwise and the shaded portion is removed and design at the top is reversed. The same changes take place from figure (3) to (4) and from figure (5) to the answer figure.
8. (*a*) The main design rotates through an angle of 90° in anti-clockwise direction and designs on top of the line shift one place in anti-clockwise direction and each time a new design is formed on top of the figure.
9. (*e*) The pattern of problem figures are



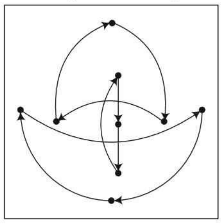
From Fig. (1) to (2)
Fig. (3) to (4)
and Fig. (5) to answer figure



From Fig. (2) to (3)
and Fig. (4) to (5)

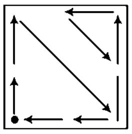
Rs = Reverse same design, RN = Reverse new design

10. (*c*) In each problem figure one new design is added to forward and backward portion of the previous designs in a specific pattern.
11. (*c*) Darken part moves one step and then becomes three parts, then moves two steps and becomes two, then moves three steps ahead and becomes five, then moves four steps ahead and becomes three darken parts.
12. (*c*) The pattern of problem figures is



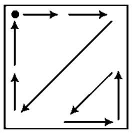
Problem Fig (1) to (2)
Problem Fig (3) to (4)
Problem Fig (5) to answer figure

13. (*d*) Shaded portion of semi-circle follows rule 1-2,3-4,5-6 and left hand and right hand diagrams exchange their position from Fig. (1) to (2) and (2) to (3) but in Fig (3) right hand side diagram becomes new. Similarly, Fig. (4) to (5) and (5) to answer figure follows.
14. (*b*) Middle diagram moves clockwise 45°, 90°, 135°, 180° and 225°. Outside all four diagrams will be same as from Fig. (2) to (3).
15. (*b*) In each step, the series rotates 90° and 45° anti-clockwise alternately. From figure (1) to (2), there is a cyclic movement among all the elements of the series from figure (2) to (3), both the end elements of the series interchange their places and the middle element is replaced by a new element.
16. (*e*) Diagram C moves clockwise 2 steps in each figure, star moves in 1, 2, 3, 4 then it will move 5 steps. Remaining one diagram moves one step downward and 2 steps upwards and is replaced with new diagram in third step.
17. (*e*) In each subsequent figure, one design is inverted and other two designs rotate 45° clockwise and anti-clockwise, respectively.
18. (*e*) From figure (1) to (2), a new element appears at the clockwise end while from figure (2) to (3), a new element appears second to the clockwise end and the same process repeats. Also, the anti-clockwise end element goes to second from anti-clockwise end while the rest of the elements also interchange their positions in pairs.
19. (*c*) Changes from figure (1) to (2) takes place as shown in the diagram. (•) represents the element which is replaced by a new element. The same process is repeated for subsequent figures but the changing pattern is rotated 90° clockwise each time as shown below.



From Fig.
(1) to (2)

after 90°
clockwise rotation →



From Fig.
(2) to (3)

20. (*e*) In each step, elements shift one side clockwise. In the first step both the end elements are replaced by new ones while in the next step, the remaining three elements are replaced. The whole process repeats.

21. (*a*) In each second step, one more symbol is added *i.e.,* from figure (2) to (3) and from figure (4) to (5). Also, the arrow and the other symbol are replaced by each other in each step.

22. (*e*) Here figure (1) is similar to (4) while figure (2) is similar to (5) except that the latter is 90° clockwise rotated form of the first. So, answer figure must be similar to figure (3) after 90° clockwise rotation.

23. (*c*) In the first step one petal is inverted and a leaflet is formed, then one petal is inverted and one petal is deleted after every two figures.

24. (*c*) The problem figure (1) is same as problem figure (4) but with inverted arrow. So, the answer figure must be same as problem figure (2) but with inverted arrow. So, option (c) must be the correct choice.

25. (*d*) In the problem figures, the triangle is pointed towards up, followed by pointed towards down alternately. Also, the triangle moves one step anti-clockwise in each figure. So, in the answer figure triangle should point up and must be present at the top left corner.

26. (*d*) Two, three, four, five, ... lines are added in each of the subsequent figures.

27. (*a*) Shaded portion of the square rotates one step anti-clockwise and the line segment inside the square rotates 90° anti-clockwise in each of subsequent figures.

28. (*b*) The arrow moves one step and two steps anti-clockwise in each of the successive figures.

29. (*c*) The leaf rotates 45° anti-clockwise and half leaf is added in clockwise direction in each of the successive figures.

30. (*d*) First figure, counting from anti-clockwise direction moves two sides anti-clockwise and becomes shaded. At the same time, other figure is replaced by a new figure at its place.

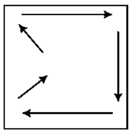
31. (*c*) In the given arrangement, each time one line from vertical and one from horizontal is removed to form the next figure. So, the next figure will be as given in option (c).

32. (*c*) In the arrangement given, the change from figure (1) is in the way that black dots remain at the same place while the rest figure is rotated by 180°.
Similarly, for answer figure, dots will remain at their places while the rest figure is rotated by 180°.

33. (*e*) From problem figure (1) to(2), the first figure (x), counting from left side, moves two sides anti-clockwise while the remaining two remain the same. From problem figure (2) to (3), the second figure (★) moves one side anti-clockwise and remaining two remain the same and from problem figure (3) to (4), the third figure (O) moves two sides anti-clockwise and the remaining two figures remain same. The same process continues in the subsequent figures.

34. (*b*) The set of all four signs move from middle to right, right to left and then from left to middle, the upper two signs interchange positions and lower two signs interchange positions and each of the signs is replaced by a new sign one by one in each of the successive figures.

35. (*d*) All the signs change positions as shown in the diagram in each of the successive figures.



36. (*a*) The shaded semi-circle moves along the diagonal and rotates 90° anti-clockwise and the other figure is same in problem figures (1), (3) and (5).

37. (*a*) In the first step, three outer corner elements shift one step in a cyclic order while the three corresponding inner elements also shift in the same way. The remaining one inner and outer elements interchange places. In the next step, the upper four and lower four elements shift one step in a cyclic order. The same process repeats.

38. (*d*) Each time the block is rotated 90° clockwise. In each step, the top and lowest row elements interchange their positions with the respective row elements as well as the rows are interchanged while the middle row elements shift from periphery towards centre in a cyclic order.

39. (*b*) From problem figure (1) to (2) the innermost and outermost designs interchange positions. Similar changes occur from problem figure (3) to (4) and from (5) to answer figure.

40. (*e*) In each subsequent figure, one design is added in a set order and the designs rotate respectively 90° anti-clockwise and 45° clockwise alternately.

41. (*e*) In the first step, the corner elements shift one side clockwise while the middle left and middle right elements interchange places. In the next step, elements shift one step upwards in a cyclic order in both the columns and the same process repeats. The shading of the main figure shifts one step clockwise in each step.

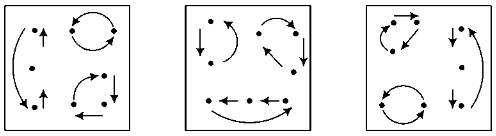
42. (*e*) In the first step, the corner elements shift one side anti-clockwise, the middle left and the middle right elements interchange places, while the central element remains constant. In the next step, the elements on the diagonal shift one step downward, while the middle right goes to the middle left and the middle right is replaced by a new one. The same process repeats.

43. (*e*) In the first step, the upper middle element shifts to the middle left, middle left to the lower left and the lower left to the upper middle while the remaining four shift one step clockwise in a cyclic order. In the next step, the middle row elements shift from left to right in a cyclic order, while the remaining four elements shift one step clockwise. The same process repeats.

44. (*d*) In the first step, the upper left and middle right interchange places, so do the upper right and middle left. The remaining three elements shift one step clockwise. In the next step, the lower left and lower right elements are replaced by new ones, while the remaining five shift one step anti-clockwise in a cyclic order. The same process repeats.

45. (*d*) In each step, the upper middle rotates by 45° clockwise and the lower middle rotates by 45° anti-clockwise. Among the middle row elements two pairs interchange places while the 5th element is replaced by a new one successively from the right to left, beginning from the right.

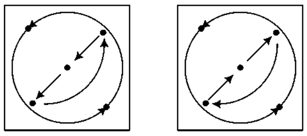
46. (*c*) The sequence of the problem figures is



Problem Fig. (1) to (2) Problem Fig. (3) to (4) Problem Fig. (5) to answer figure

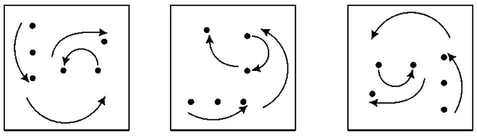
47. (*d*) In every step 3, 2, 3 and 2 upper figures are deleted and 4,3,4 and 3 figures are deleted from lower figures.

48. (*c*) The sequence of the problem figures is



Problem Fig. (1) to (2),
Problem Fig. (3) to (4) and
Problem Fig. (5) to answer figure

49. (*b*) The sequence of the problem figures is



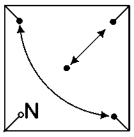
Problem Fig. (1) to (2) Problem Fig. (3) to (4) Problem Fig. (5) to answer figure

50. (*c*) From problem Fig. (1) to (2), first and second, fourth and fifth interchange places. Third design changes in a new design, similarly (3) ⇒ (4) and (5) ⇒ Answer figure.

51. (*c*) In the first step, the uppermost and the lowermost elements interchange places while the remaining elements shift one step upwards in a cyclic order. In the next step, the elements of the upper pair interchange places. So do the elements of the lower pair while the two middle elements are replaced by new ones.

52. (*b*) In the first step, the elements along the diagonal interchange places in a set order. In the next step the elements of the upper triangle shift one step clockwise while elements of the lower triangle interchange places.

53. (*c*) The sequence of problem figures is



N = New design

and whole figure rotates by 90° clockwise.

54. (*a*) The inner line moves $1, 1\frac{1}{2}, 2, 2\frac{1}{2}, \ldots$ sides in anti-clockwise direction in each of the successive figures and the other semi-circle travels $1, 1\frac{1}{2}, 1\frac{1}{2}, 2, 2\frac{1}{2}, \ldots$ sides in the clockwise direction.

55. (*c*) Figure (5) is same as figure (1) but gets rotated by 90° in clockwise direction. So, the answer figure must be same as figure (2) but with 90° clockwise rotation.

56. (*e*) Shaded portion moves 2 and 3 divisions clockwise alternatively in each of the successive figures.

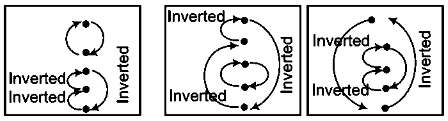
57. (*d*) Main design is same in figure (5) as in figure (1), therefore, the main design will be same for answer figure as in figure (2). One line is added to the base of the main figure after every two figures.

58. (*c*) This question is based on (1) ⇒ (2), (3) ⇒ (4) and (5) ⇒ Answer figure.

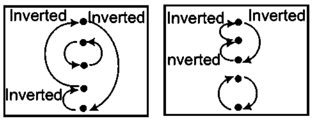
59. (*b*) From figure (1) to (2), two more boxes get shaded in clockwise direction, then from figure (2) to (3)starting one box gets undarkened. The same process is repeated.

60. (*c*) Shaded portion moves one block in clockwise direction in every successive step.

61. (*a*) Change in positions of elements takes place as below

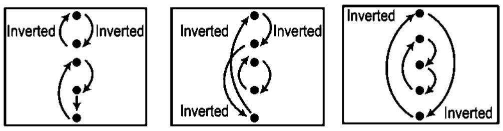


From Fig. (1) to (2) From Fig. (2) to (3) From Fig. (3) to (4)

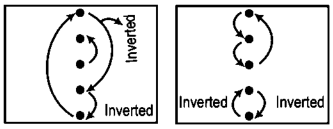


From Fig. (4) to (5) From Fig. (5) to (6)

62. (*b*) Changes in positions of elements take place as below

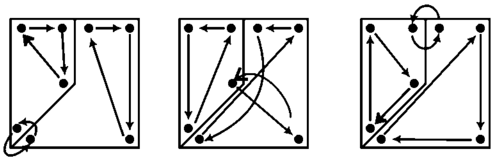


From Fig. (1) to (2) From Fig. (2) to (3) From Fig. (3) to (4)

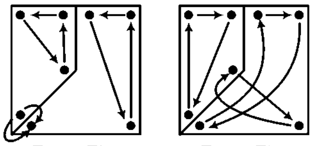


From Fig. (4) to (5) From Fig. (5) to (6)

63. (*a*) Changes in positions of elements take place as below



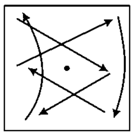
From Fig. (1) to (2) From Fig. (2) to (3) From Fig. (3) to (4)



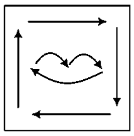
From Fig. (4) to (5) From Fig. (5) to (6)

64. (*e*) Line rotates through 135°, 90°, 135°, 90°, respectively, in clockwise direction. One of the two symbols is shifted in place of the other symbol and a new symbol is formed at its place. The same process is repeated in the successive figures.

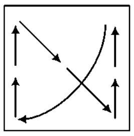
65. (*c*) Changes from figure (1) to (2), from (2) to (3) and from figure (3) to (4) takes place as shown in the diagram. (•) represents the element which is replaced by a new element. The same process is repeated in the subsequent figures.



From fig (1) to (2)



From fig (2) to (2)



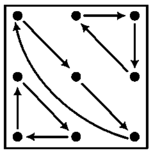
From fig (3) to (4)

66. (*b*) From figure (1) to (2), one arc is inverted, from figure (2) to (3), two arcs are inverted, then from figure (3) to (4), one arc is inverted and two arcs are inverted from figure (4) to (5). The same process is repeated from problem figure (5) to the answer figure.

67. (*d*) Elements moves from left to upper right → lower right → upper left → lower left → right position in subsequent steps. A new element appears in each step in the left base.

68. (*b*) Change from figure (4) to figure (5) is the same as change from figure (1) to (2). So, change from figure (5) to (6) is the same as the change from figure (2) to (3).

69. (*e*) Changes in position of elements from figure (1) to (2) = from figure (3) to (4) = from figure (5) to (6). Such changes take place as below



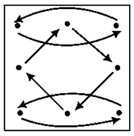
70. (*a*) The central figure is same in figure (5) as it is in figure (2). Hence, it will be same in answer figure as it is in figure (3). The outer figure is same in figure (5) as it is in figure (1). Hence, it will be same in answer figure as it is in figure (2).

71. (*e*) Figures change in such a way that dot lies in the space common to circle and triangle in one step and it lies in the space common to triangle and rectangle in next step. This process is repeated in the subsequent figures.

72. (*c*) The direction of U is same in figure (1) and (4) and also in figure (2) and (5).So, the direction of U in the answer figure must be same as it is in figure (3). Also, N is inverted in each subsequent figure. For two subsequent figures, the direction of the arrow remains same and then changes to the other side and again remains same for two subsequent figures.

73. (*e*) From figure (1) to (2), first symbol, counting from left hand side occupies the position of second symbol and is inverted, second symbol comes at fourth position, fourth symbol comes at third position and is inverted and third symbol comes at first position and is replaced by a new one. Same changing pattern follows from figure (3) to (4) . So, the same changes in figure (5) will result into the answer figure.

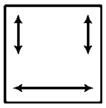
74. (*d*) Changes in positions of elements from figure 1 to 2 = from figure 3 to 4 = from figure 5 to 6. Let us see how the changes take place.



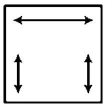
75. (*b*) For the upper part follow, if 1 = 5, then 2 = 6 pattern.

76. (*a*) In each step, two of the elements interchange positions while the remaining three shift one step clockwise in a cyclic order. This movement itself shifts in clockwise order.

77. (*d*) Changes take place from figure (1) to (2) and from figure (2) to (3) as shown in the diagram. The same process is repeated from figure (3) to (4) and from figure (4) to (5) and so on.



From Fig. (1) to (2)



From Fig. (2) to (3)

78. (*c*) In each of the successive figures, a new sign is formed at the top left position and the symbol it replaces comes in the middle. The sign at the middle position comes at the middle top position and the same process is repeated in the successive figures.

79. (*e*) In alternate steps, from (1) to (2), (3) to (4) and (5) to (6), the uppermost element goes to lowermost, the other elements shift one step upward and the element reaching the uppermost position is replaced by a new one.

80. (*b*) In each of the successive figures, a new outer design is formed. Arrow rotates anti-clockwise through angles of 45°, 90°, 135°, 180°, 225°, … and the figure inside the main design starts getting doubled from figure (4) onwards.

81. (*d*) 'U' is revolving in clockwise direction in every step and also a new symbol 'U' is added in every step hence (d) is the answer.

82. (*d*) In the problem figures, there comes a circle and a square at the centre alternately. So, in the 7th figure, there must b a circle at the centre. Also, the direction of arrows is same in figure (1) and (4), (2) and (5), (3) and (6). So, the direction of arrows in figure (7) must be the same as in figure (4). So, option (d) is the right choice.

83. (*b*) In each step, the left most symbol gets shifted to the right most side and also gets inverted.

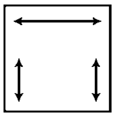
84. (*b*) From the four figures, we can say that the pattern of movement of the triangle is anti-clockwise one box at a time, along the outer edge, while the movement of the semi-circle like element is anti-clockwise along the inner four squares. Thus (b) represents the next of movements of the two elements proceeding from figure (4).

85. (*c*) The heads of the arrow move on the arrow line in a set order.

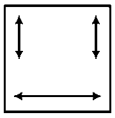
86. (*d*) From problem figure (1) to (2), the upper half of one arrow rotates 45° clockwise, from figure (2) to (3), the lower half of the same arrow rotates 45° clockwise. From figure (3) to (4) and also from (4) to (5), the same process is repeated for the other arrow.

87. (*d*) From problem figure (1) to (2), all the symbols move one step in clockwise direction and first symbol in clockwise direction is replaced by a new symbol. From figure (2) to (3), all the symbols move in triangular direction clockwise and the same process is repeated in the successive figures.

88. (*b*) All the symbols interchange positions with one another, as shown in the two diagrams, alternatively.



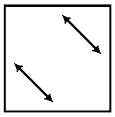
From Fig. (1) to (2)



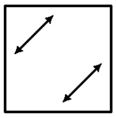
From Fig. (2) to (3)

89. (*d*) From problem figure (1) to (2), one circle is deleted and two triangles are added. From problem figure (2) to (3), one triangle is deleted and three squares are added. From problem figure (3) to (4), one square is deleted and four plus are added. The same process continues.

90. (*c*) All the symbols interchange positions with one another as shown in the two diagrams alternatively and a new symbol appears in place of previous symbol in each successive figure in anti-clockwise direction, starting from bottom position.



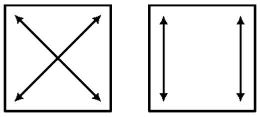
From Fig. (1) to (2)



From Fig. (2) to (3)

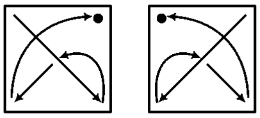
91. (*a*) From problem figure (1) to (2), the symbols move half side in anti-clockwise direction and first and last symbols interchange positions and a new symbol is added in the beginning of the series. The same process is repeated in the successive figures.

92. (*a*) Four symbols at the corners interchange positions as shown in the diagrams alternatively and symbols at the centre are converted into new symbols.



93. (*a*) The main figure rotates 45° anti-clockwise and one line/arc is added to the main figure.

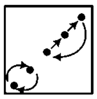
94. (*d*) Symbols change positions as shown in the two diagrams alternatively and the symbol in place of (•) is replaced by a new symbol.



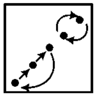
95. (*b*) The arrow rotates 90°, 180° alternatively in the anti-clockwise direction.

96. (*c*) The figure rotates 45° clockwise in each of the successive figures.

97. (*d*) Changes from figure (1) to (2) and from figure (2) to (3) are shown as below. The whole process repeats.



From Fig. (1) to (2)



From Fig. (2) to (3)

98. (*e*) Arrow rotates 45° anti-clockwise and 90° anti-clockwise, alternately.

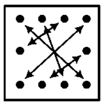
99. (*e*) Follow, if 4 = Inverse of 1, 5 = Inverse of 2, then 6 = Inverse of 3 pattern.

100. (*b*) Follow, if 1 = 5, then 2 = 6 pattern.

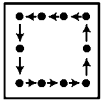
101. (*e*) In the first step, the left column elements shift downwards in a cyclic order while the right column elements shift one step upward in a cyclic order. In the next step, the elements of the upper box shift one step clockwise while elements of the lower box one step anti-clockwise in a cyclic order. The process is repeated.

102. (*b*) From Fig. 1 to 2 the second element from left becomes first, the fourth becomes third and the fifth remains constant while new elements appear at second and fourth places. From fig. 2 to 3, the series get reversed and then the whole process repeats.

103. (*d*) Changes from figure (1) to (2) and from figure (2) to (3) are shown as below. Then, the whole process repeats.



From Fig. (1) to (2)



From Fig. (2) to (3)

104. (*a*) The symbol at bottom right position moves one side clockwise and is replaced by a new symbol in every third figure, the symbol at top right position moves along diagonal and is replaced by a new symbol in every third figure. The same process is repeated for the third symbol.

105. (*b*) Set of three symbols rotates 90° anti-clockwise in such a way that both the lines interchange positions, other two symbols interchange their positions and one of them is replaced by a new symbol one by one, alternatively.

106. (*a*) Symbols present on either sides of the lines interchange positions, one of the symbols rotates 45° clockwise one by one in each figure and both the symbols along one line are replaced by new symbols after every two figures.

107. (*d*) Figure rotates 45°, 90°, 135°, ... anti-clockwise; arrow and lines get inverted in every subsequent figure. One line is added to the figure in every second figure.

108. (*e*) Triangle moves along the diagonal, square moves one side clockwise and is changed into a new symbol in every second figure. The third symbol also moves along the diagonal and is replaced by a new symbol in every second figure.

2

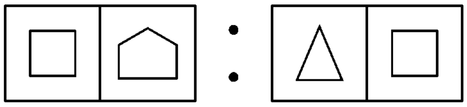
Analogy

Analogy means similarity of relationship. If a pair of figures exhibits some kind of relationship on the basis of shape, size, rotation, interchange of elements, number of elements etc., and another pair of figures exhibits the same kind of relationship between them, then the two pairs are said to be analogous to each other.

Different types of questions covered in this chapter are as follows

- Choosing One Element of a Similarly Related Pair
- Finding the Odd Pair of Figures
- Finding a Pair of Similar Figures in Pattern to Original Pair
- Finding the Pair of Figures having Pattern other than the Original Pair
- Selecting the Correct Figure on the Basis of Analogous Figure
- Selecting the Correct Set of Figures to Establish Analogy

Let us consider a set of figures as shown below



If we carefully examine the first pair of figures, then we will find that first figure is formed with four sides and second figure is formed with five sides. Similarly, in second pair, first figure is formed with three sides and second figure is formed with four sides.

So, in each pair, second figure contains one more side than the first figure. Since, figures in each pair bear a similar relationship for number of sides, hence are analogous to each other. From the above analogical set, it is clear that the figures in both the pairs are not same but follow certain logical pattern which establishes a relation between these figures. Basically, this chapter is all about identifying such logical patterns that establish a relationship between two given figures.

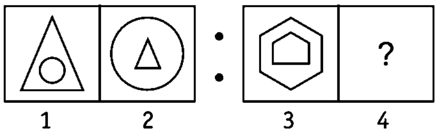
The basis for establishing such relationship between the different figures is given below

1. Size of Figures

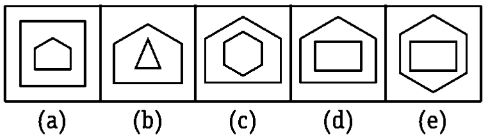
In this type of questions, the size of the figures in the first figure of one pair are interchanged to obtain the second figure of the pair, *i.e.*, the smaller figure becomes larger and the larger figure becomes smaller. Similar relationship/pattern is followed to obtain the missing figure of another pair.

Ex **1** Find the figure from the answer figure that will replace the question mark (?) from the problem figure.

Problem Figures



Answer Figures



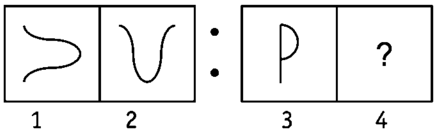
Sol. (*c*) By the careful analysis of first part of the problem figure, we find that from first to second figure, the large triangle become small and the small circle become large. In the same manner, from third to fourth figure, the large hexagon becomes small and the small pentagon becomes large as shown in figure (c).

2. Rotation of Figure

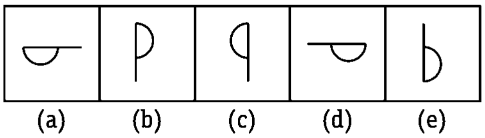
In this type of questions, first figure of one pair rotates by a certain angle to obtain the second figure of the pair. By following the same rotation pattern, the missing figure of another pair is to be found out.

Ex **2** Find the figure from the answer figure that will replace the question mark (?) from the problem figure.

Problem Figures



Answer Figures



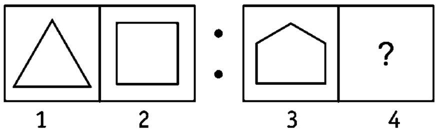
Sol. (*d*) By the careful analysis of first part of the problem figure, we find that first figure is rotated 90° clockwise to obtain the second figure. In the same manner,the third figure is rotated 90° clockwise to obtain the answer figure as given in option (d).

3. Number of Lines/ Elements

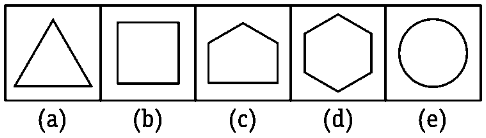
In this type of questions, the number of lines get increased or decreased in the first figure of one pair to obtain the second figure of the pair. By following the same pattern, the missing figure of another pair is to be found out.

Ex **3** Find the figure from the answer figure that will replace the question mark (?) from the problem figure.

Problem Figures



Answer Figures



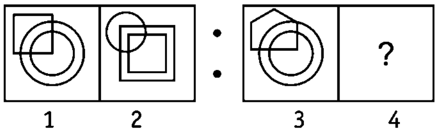
Sol. (*d*) By the analysis of first part of the problem figure,we find that the first figure has three lines which become four in the second figure *i.e.*, from first to second figure one line is added. In the same manner, third figure has five lines which will transform into a six line figure in the fourth figure as shown in option (d).

4. Interchanging Position of the Figures

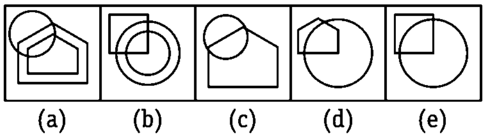
In this type of questions, the figures inside the first figure of one pair interchange their places to obtain the second figure of the pair. By following the same pattern, the missing figure of another pair is to be found out.

Ex **4** Find the figure from the answer figure that will replace the question mark (?) from the problem figure.

Problem Figures



Answer Figures



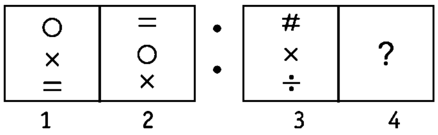
Sol. (*a*) By careful analysis of first part of the problem figure, we find that from first to second figure, the upper and lower figures interchange their places, *i.e.*, the upper figure becomes lower and the lower figure becomes upper figure. The upper figure also appears in pair after interchange of position. Similarly, from third to fourth figure the upper and lower figures interchange places and also the interchanged figures appear in pair as shown in figure (a).

5. Rearrangement of Symbols

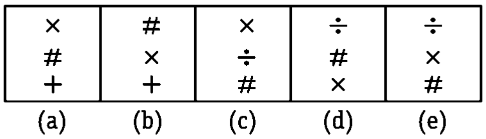
In this type of questions, the symbols of the first figure of one pair interchange their places with each other following a certain rule with or without producing a new symbol to obtain the second figure of the pair. By following the same rule, the missing figure of another pair is to be found out.

Ex **5** Find the figure from the answer figure that will replace the question mark (?) from the problem figure.

Problem Figures



Answer Figures



Sol. (*d*) By careful analysis of first part of the problem figure, we find that from first to second figure, each symbol moves one step downward and the lower most symbol become the topmost symbol. Similarly from third to fourth figure, each symbol moves one step downward and the lowermost symbol become the topmost symbol as given in option (d).

Various types of problems based on analogy which are asked in exams are discussed below

Type 1 Choosing One Element of a Similarly Related Pair

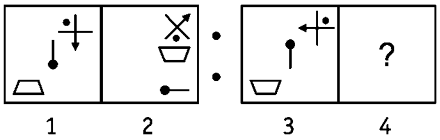
In this type of questions, two sets of figures namely problem figures and answer figures are given. The set of problem figures consists of two parts. The first part comprises of two figures which have some relationship between them on the basis of certain rule. The second part comprises one figure and a sign of '?'.

To solve this type of questions, candidates are required to select one figure from the set of answer figures which replaces the sign of '?'. In this case always remember that it bears same relationship with the other figure as first figure of the first part bears with second figure of the same part.

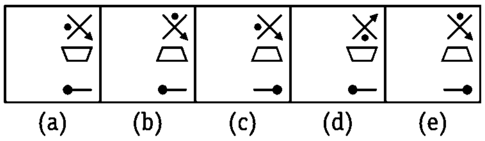
Following examples illustrate the types and methods to solve the questions on analogy

Directions (Example Nos. 6-13) In the following questions, the first and second figure of the problem figures have certain relation between them and the same relation exists between the third figure and one of the five answer figures (a), (b), (c), (d) and (e). Find that answer figure from the options that will replace '?' from problem figures.

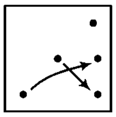
Ex **6** **Problem Figures**



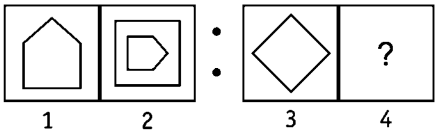
Answer Figures



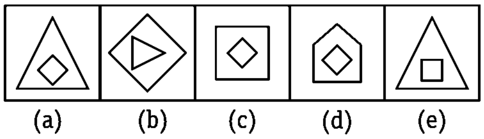
Sol. (c) From problem,figure (1) to (2), the pin rotates 90° clockwise, the trapezium is inverted and the third figure rotates 135° anti-clockwise. The same rule will apply to obtain figure (4) from figure (3).



Ex **7** **Problem Figures**

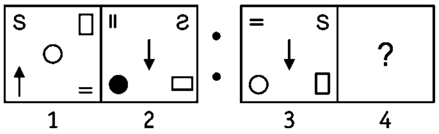


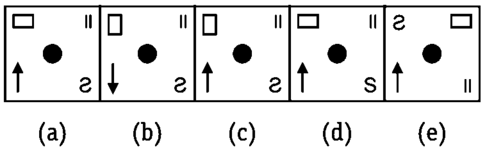
Answer Figures



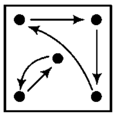
Sol. (*a*) From problem figure (1) to (2), the pentagon rotates 90° clockwise and a square (having four sides) covers it. Similarly, from figure (3) to (4) the square (having four sides) rotates 90° clockwise and will be covered by a triangle (having three sides).

Ex **8** **Problem Figures** **Answer Figures**

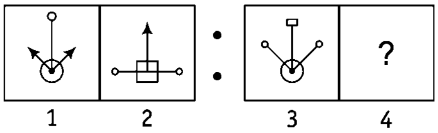


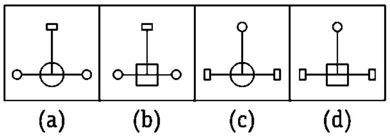


Sol. (*a*) From problem figure (1) to (2), all the symbols change their positions as shown in the diagram in such a way that symbol S is reversed, rectangle rotates 90°, arrow is inverted, circle is shaded and symbol = rotates 90°.



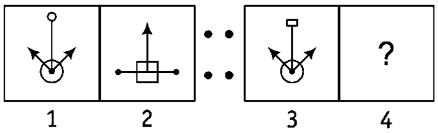
Ex **9** **Problem Figures** **Answer Figures**

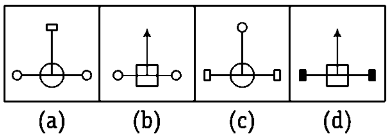




Sol. (*d*) From problem figure (1) to (2), double figure is converted into single figure and *vice-versa*. Also, figures change places in a set order.

Ex **10** **Problem Figures** **Answer Figures**

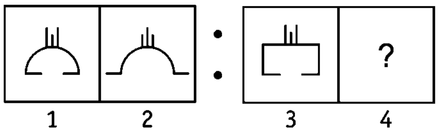


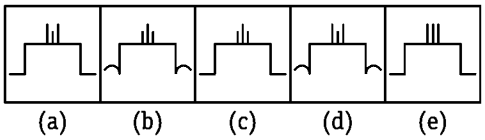


[SSC (10+2) 2013]

Sol. (*d*) From problem figure (1) to (2), bottom circle is replaced with square and both the side lines made an angle of 90° and the top part of both lines are replaced with the top part of middle line and *vice-versa*.

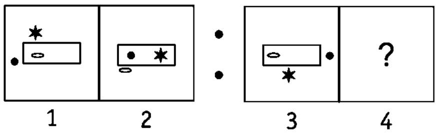
Ex **11** **Problem Figures** **Answer Figures**

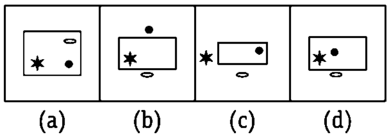




Sol. (c) Line segments attached to the base of the figure come outside and the line segments at the top interchange size.

Ex **12** **Problem Figures** **Answer Figures**

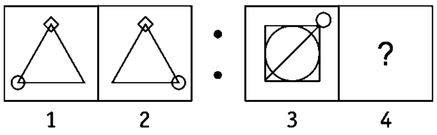


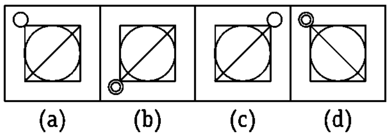


[SSC (10+2) 2013]

Sol. (*d*) From problem figures (1) to (2), the outer figures come inside the rectangle and inner figure comes outside the rectangle.

Ex **13** **Problem Figures** **Answer Figures**





[SSC (CGL) 2006]

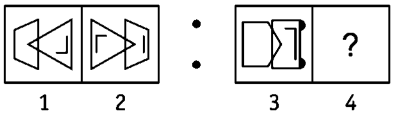
Sol. (*a*) From problem figure (1) to (2) the circle moves one step in anti-clockwise direction.

Practice Corner **2.1**

Build your Confidence...

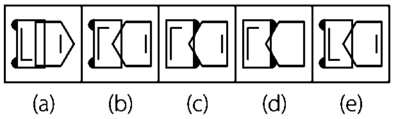
Directions (Q. Nos. 1-55) The second figure in the first unit of the problem figures bears a certain relationship to the first figure. Similarly, one of the figure in the answer figures bears the same relationship to the first figure in the second unit of the problem figures. You have to select that figure from the set of answer figures which would come in the place of question mark (?)

1. Problem Figures

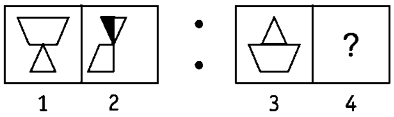


[SBI (PO) 2012]

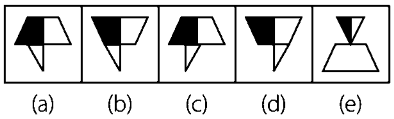
Answer Figures



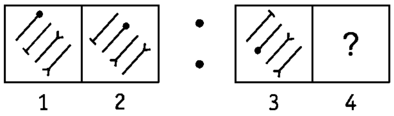
2. Problem Figures



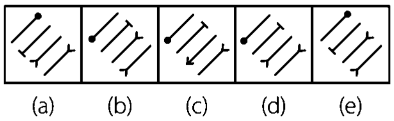
Answer Figures



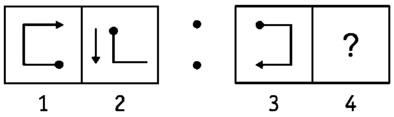
3. Problem Figures



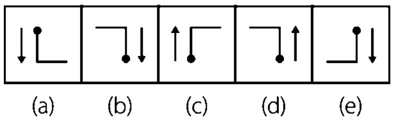
Answer Figures



4. Problem Figures



Answer Figures



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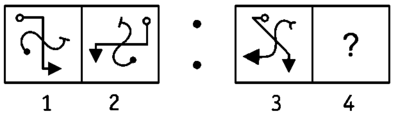
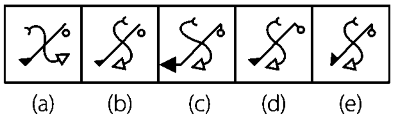
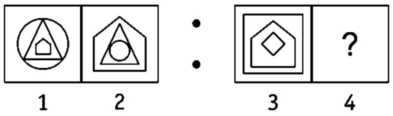


Answer Figures

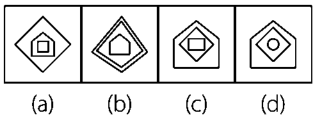


6. Problem Figures



[SSC (CGL) 2012]

Answer Figures



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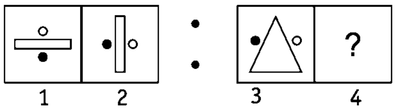
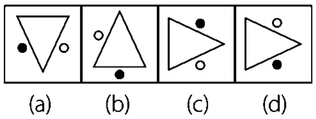


[SSC (CGL) 2006]

Answer Figures



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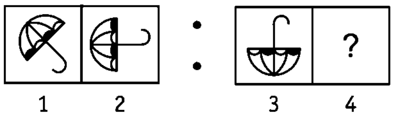
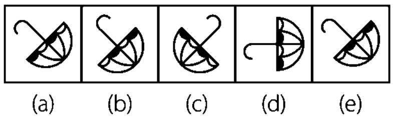
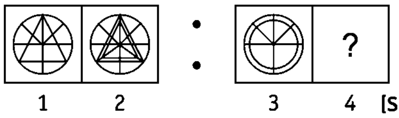


Answer Figures

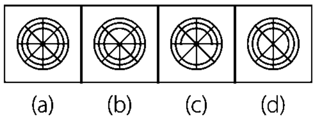


9. Problem Figures

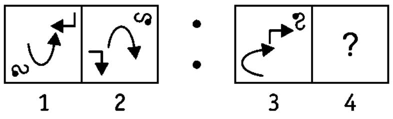


[SSC (Multitasking) 2012]

Answer Figures



10. Problem Figures



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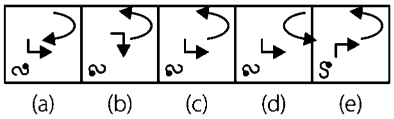
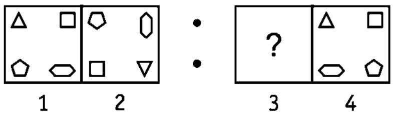


11. Problem Figures



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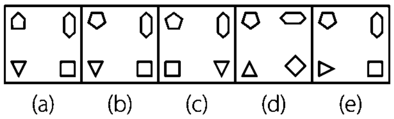
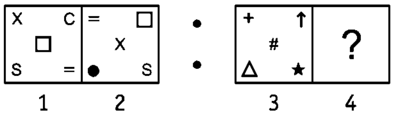


12. Problem Figures



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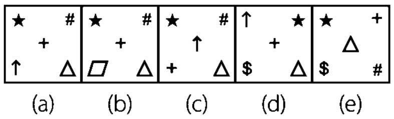

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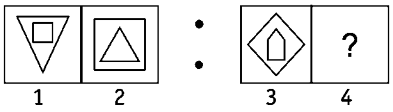
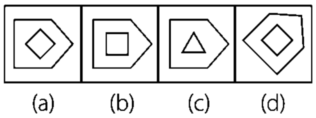


[SSC (CGL) 2008]

Answer Figures



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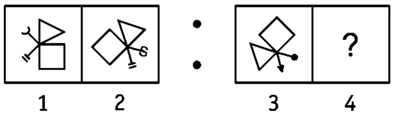
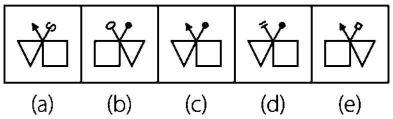


[UCO Bank (PO) 2009]

Answer Figures



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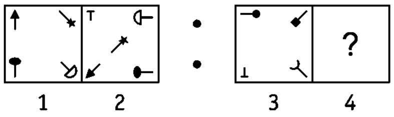
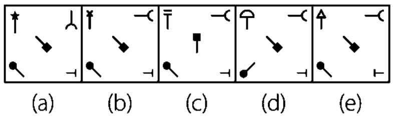
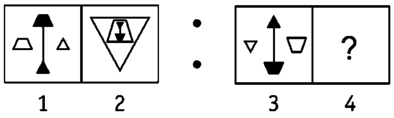


[UCO Bank (PO) 2009]

Answer Figures

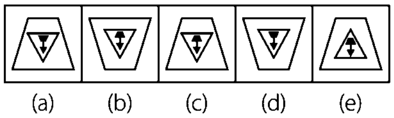


16. Problem Figures

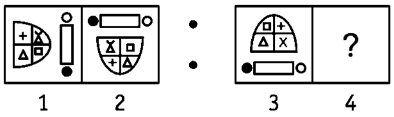


[UCO Bank (PO) 2009]

Answer Figures



17. Problem Figures



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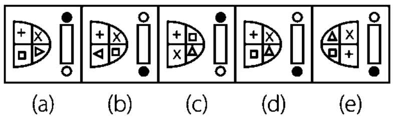
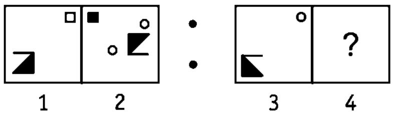


18. Problem Figures



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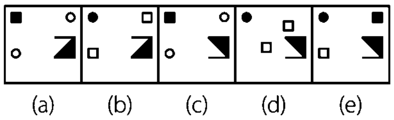
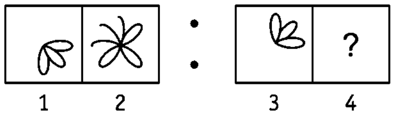


19. Problem Figures



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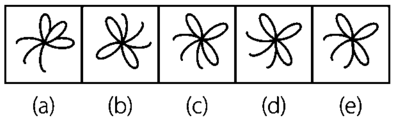
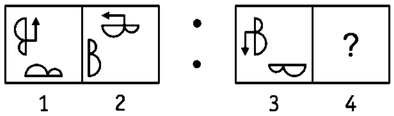
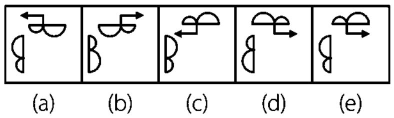


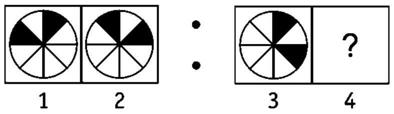
20. Problem Figures



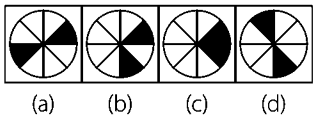
Answer Figures



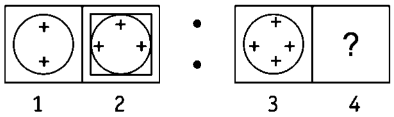
21. Problem Figures



Answer Figures

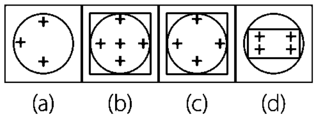


22. Problem Figures

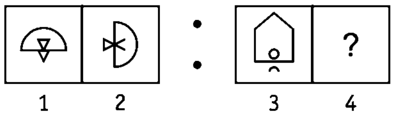


[SSC (DEO) 2008]

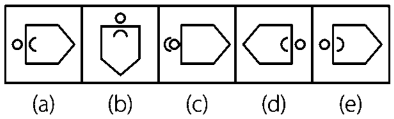
Answer Figures



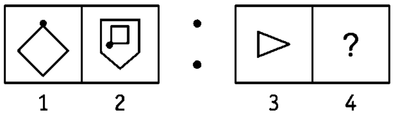
23. Problem Figures



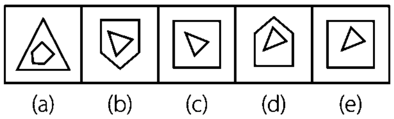
Answer Figures



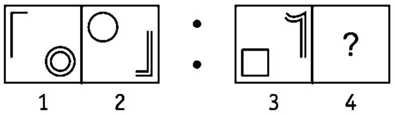
24. Problem Figures



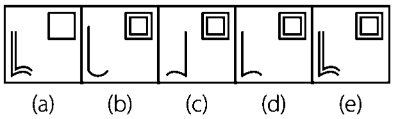
Answer Figures



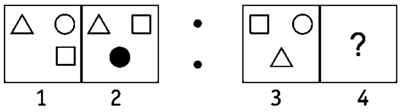
25. Problem Figures



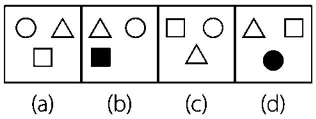
Answer Figures



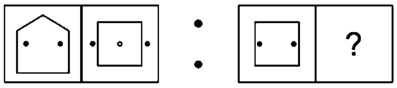
26. Problem Figures



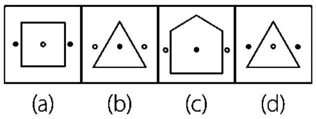
Answer Figures



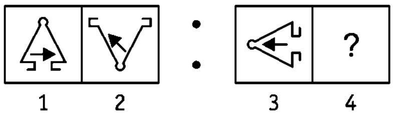
27. Problem Figures



Answer Figures



28. Problem Figures



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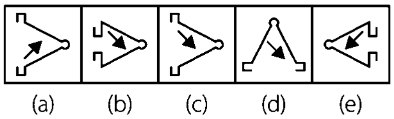

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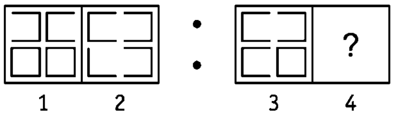

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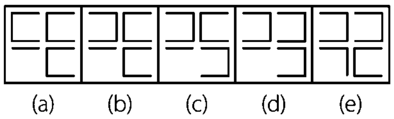

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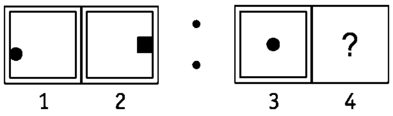

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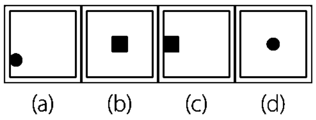

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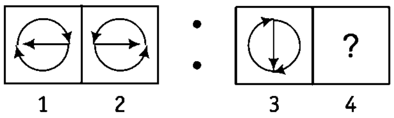

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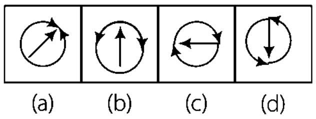

[SSC (Steno) 2012]

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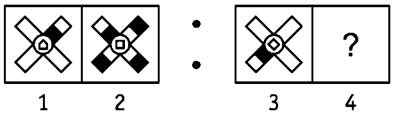

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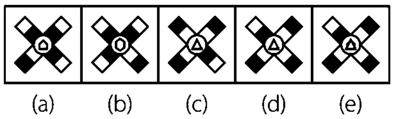

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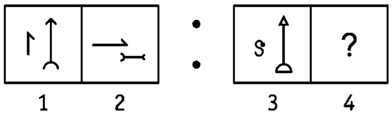

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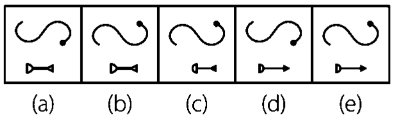

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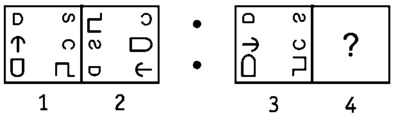

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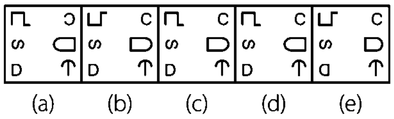

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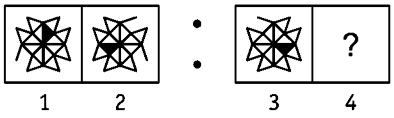

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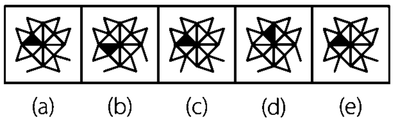

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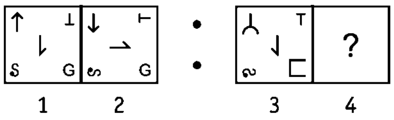

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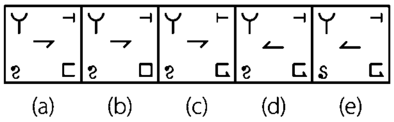

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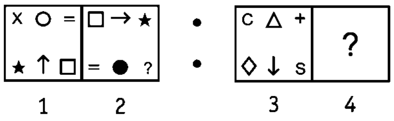

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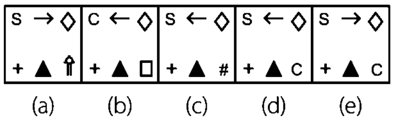

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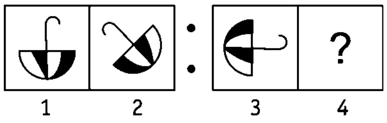

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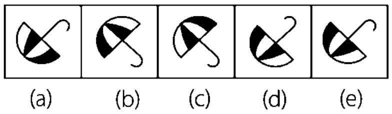

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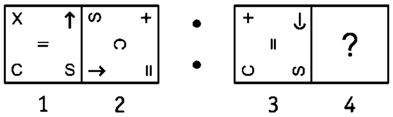

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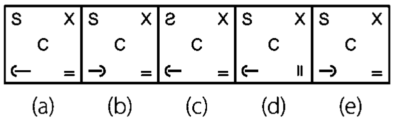

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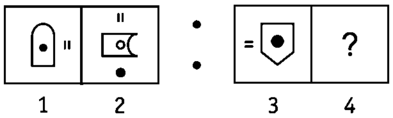

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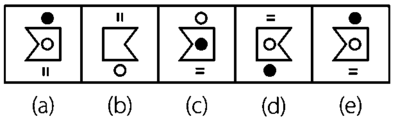

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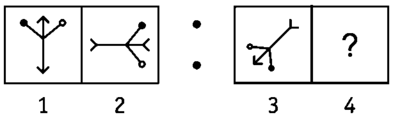

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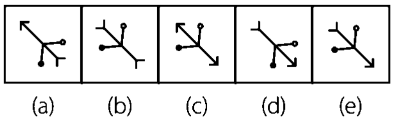

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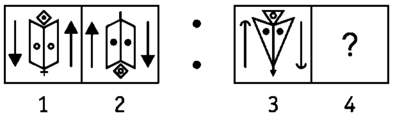

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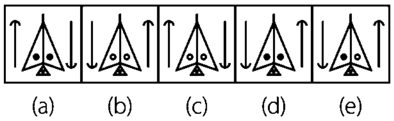

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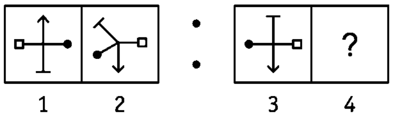

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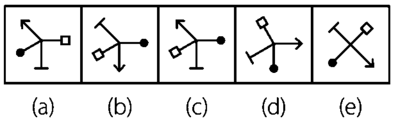

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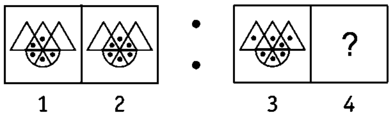

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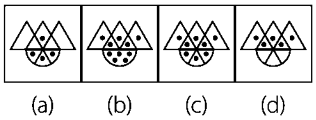

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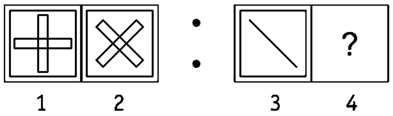

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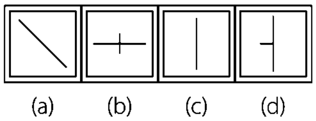

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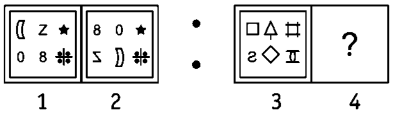

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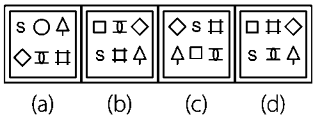

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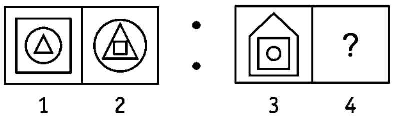

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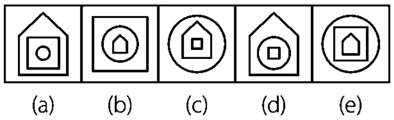

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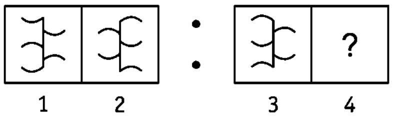

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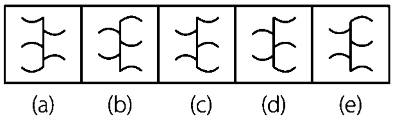

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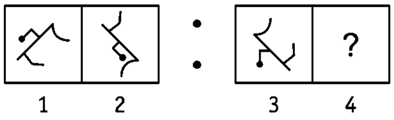

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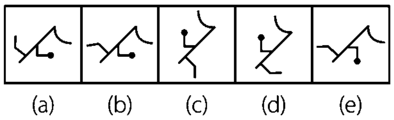

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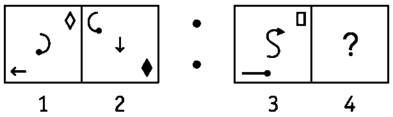

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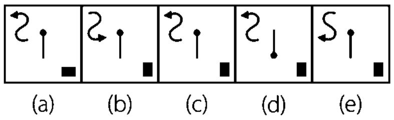

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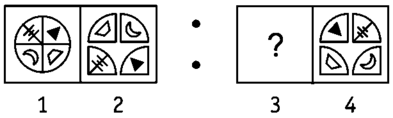

[UCO Bank (PO) 2008]

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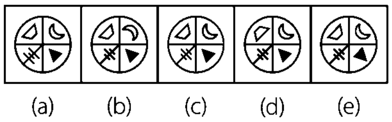

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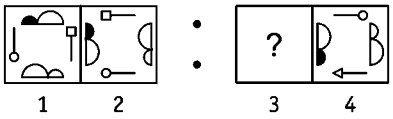

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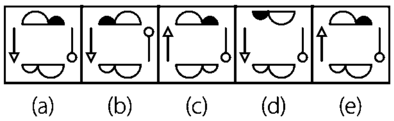

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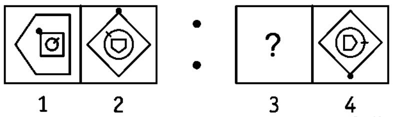

[Allahabad Bank (PO) 2008]

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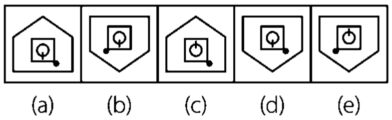

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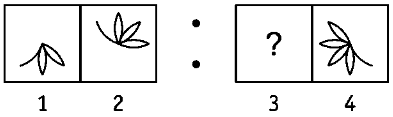

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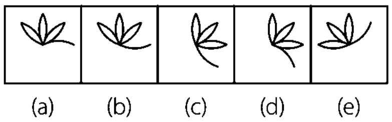

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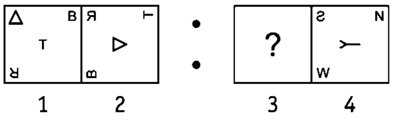

[SBI (PO) 2011]

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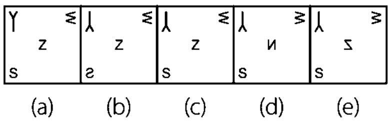


Response & Interpretations **(2.1)**

1. (*e*) From problem figure (1) to (2) , the whole figure gets laterally inverted while the L shaped figure rotates by 180°. Also, one line is added to the other figure.

2. (*a*) From problem, figure (1) to (2) , the whole figure gets inverted vertically. Now, the upper part gets half-shaded while the lower one is reduced to half.

3. (*d*) Both the upper and lower pair of figures interchange positions.

4. (*d*) Arrow rotates 90° clockwise and the remaining portion of the figure rotates 90° anti-clockwise and then is reversed at new position.

5. (*c*) Straight line portion of the figure rotates 90° clockwise, curved line portion of the figure rotates 90° anti-clockwise.

6. (*a*) From problem figure 1 to 2, the inner most figure becomes outer most figure and outer most figure becomes the inner most figure *i.e.,* first and third figure get interchanged.

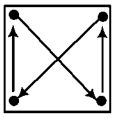
7. (*c*) From first figure to second figure, the design rotates through 90° clockwise.

8. (*a*) The figure rotates 45° anti-clockwise, the handle is reversed and the black portion becomes white and the white portion becomes black.

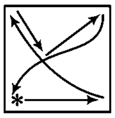
9. (*a*) In the second figure, a small figure is added, same as that present inside the circle and two small lines are added in lower part of figure.

10. (*c*) Counting from top, the first figure rotates 90° anti-clockwise and comes at third position, second figure is reversed at the same position and third figure rotates 180° and after reversing comes at the first position.

11. (*b*) From problem figure (1) to (2), symbols change positions as shown in the diagram and rotate through 180° except the hexagon as it rotates through 90°. Same pattern will follow from answer figure to figure (4).



12. (*b*) From problem figure (1) to (2), all the symbols change positions as shown in the diagram and the symbol in place of * is replaced by new symbol.



13. (*a*) From figure (1) to (2) both the designs interchange positions and one design is inverted.

14. (*d*) From figure (1) to (2) , the whole figure rotates by 45° in clockwise direction and gets inverted on its base line. One of the end elements is replaced.

15. (*b*) From figure (1) to (2) , the upper left element rotates by 135° anti-clockwise and shifts to lower left. The lower left rotates by 90° anti-clockwise and shifts to lower right. The lower right rotates by 135° clockwise and shifts to upper right. The upper right rotates by 90° anti-clockwise and shifts to the centre.

16. (*c*) From figure (1) to (2) , the right figure gets inverted and enlarged. The left one moves to the middle and the middle figure gets inverted and reduced in size and becomes the innermost element.

17. (*a*) Semi-circular figure rotates 90° clockwise and all the signs move two steps in anti-clockwise direction. The second figure moves one step anti-clockwise and both the circles interchange positions.

18. (*d*) From problem figure (1) to (2), larger figure rotates 180° in clockwise direction and moves one and half step in anti-clockwise direction. The smaller figure moves one step in anti-clockwise direction and becomes darkened and two new small figures are added.

19. (*c*) Both the leaves at the extreme ends get deviated by 45° and three half leaves are added on the back of the figure pointing in anti-clockwise direction.

20. (*e*) Both the figures move clockwise in such a way that the first figure moves one step and rotates by 90° anti-clockwise, the second figure moves half side, rotates by 90° anti-clockwise and is reversed.

21. (*b*) From first figure to second figure, the shaded parts move one sector in clockwise direction.

22. (*b*) From first figure to second figure, both designs inside the circle move in clockwise direction and one design appears in the middle of the two designs.

23. (*e*) The figure rotates through 90° clockwise. The inner figure is inverted and comes out side and the out side figure goes inside.

24. (*c*) The figure rotates through 135° anti-clockwise and a new figure comes outside the existing figure. The number of sides of the new figure is one more than that of the existing figure.

25. (*d*) Both the figures interchange positions. The bent line figure rotates through 180° at the new position. Also, the single figure is doubled and the doubled figure is reduced to a single figure.

26. (*b*) From first figure to second figure the designs move in clockwise direction and top left corner design remains unchanged and the design which comes at the bottom position gets shaded.

27. (*d*) From first figure to second figure one side of the pentagon is deleted and a square is formed and the two black dots move out of the main design while a small white circle is introduced inside the main design.

28. (*c*) The figure is inverted and bent lines on the base get reversed. The arrow inside the figure rotates through 135° anti-clockwise.

29. (*c*) The upper two figures are reversed. The figure at the lower left position loses two sides and the figure at the lower right position loses one side.

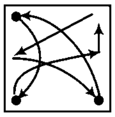
30. (*b*) From first figure to second figure, the circle is changed into a square.

31. (*d*) Figure (2) is obtained by the lateral inversion of figure (1).

32. (*c*) The figure rotates 90° anti-clockwise and the upper portion of all other three arms also become shaded. One side is reduced from the inner figure and will be a triangle.

33. (*b*) Small line rotates through 90° clockwise and is inverted and enlarged. Large arrow rotates through 90° clockwise, becomes smaller and the head of the arrow is reversed. Similar, changes take place from problem figure (3) to (4).

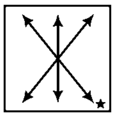
34. (*d*) Change in the positions of the symbols takes place as shown in the diagram. Also, each of the symbols rotates in a specific order.



35. (*d*) Shaded portion moves three steps anti-clockwise. One line is added to the triangle and two lines are removed from the triangles present on the border of the main figure.

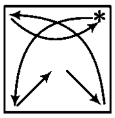
36. (*a*) Sign at the top left position is inverted, sign at top right position rotates 90° clockwise, sign at the bottom left position rotates 90° clockwise, sign at the central position rotates 90° anti-clockwise and the sign at bottom right position remains unchanged.

37. (*c*) All the symbols interchange positions as shown in the diagram. Also, each of the symbols changes its direction at the new position in a specific order and the symbol in place of * is replaced by a new symbol.



38. (*a*) Figure rotates 45° anti-clockwise, black portion become white and *vice-versa*, also the handle of the figure is reversed.

39. (*a*) All the signs change positions as shown in the diagram and rotate in a specific order and the sign in place of ∗ is replaced by a new sign and rotates in a specific order.



40. (*e*) The whole figure rotates 90° clockwise and the lifted portion of the figure is pressed. Shaded dot comes outside the figure at the place of = and the sign of = moves to the opposite side after rotating 90° clockwise and a blank dot is formed inside the main figure.

41. (*e*) The figures rotate 90° clockwise and heads of the arrow are reversed.

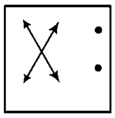
42. (*b*) The entire figure along with arrows is reversed, black dots become white and *vice-versa* and a line segment from the head of the figure is removed.

43. (*c*) Bottom and right arms of the figure rotate through 135° clockwise while left and top arms of the figure rotate through 180°.

44. (*c*) From first figure to second figure, one dot is added.

45. (*c*) From first figure to second figure, the design rotates through 45° clockwise.

46. (*c*) The following changes occur from first figure to second figure.



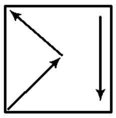
Hence, option (c) is the correct answer.

47. (*b*) Innermost figure comes in the middle, the middle figure becomes outermost and the outermost figure comes inside the main figure.

48. (*c*) The main figure is first rotated by 180°, then all the arcs present on the figure are also reversed at the same positions.

49. (*b*) The figure rotates through 90° anti-clockwise and line segment attached to the ends is reversed. The pin attached to figure rotates through 90° in anti-clockwise direction.

50. (*c*) All the signs change positions as shown in the diagram in such a way that arrow rotates 90° anti-clockwise, quadrilateral becomes shaded and other sign is reversed at the new positions.



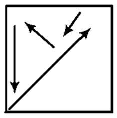
51. (*c*) From figure (2) to (1), the upper left part becomes the lower right; the lower right becomes the upper right; the upper right becomes the lower left, and the lower left becomes the upper left part and they join together to form a circle.

52. (*a*) From figure (2) to (1), the LHS element rotates by 90° anti-clockwise and shifts to upper position; the upper one rotates by 90° anti-clockwise and gets inverted and shifts to the right hand side; while the lower one rotates by 90° anti-clockwise and becomes LHS element.

53. (*d*) From figure (2) to (1), the innermost element rotates by 90° clockwise and becomes the outermost, the outermost rotates by 45° anti-clockwise and becomes the middle while the middle one rotates by 90° clockwise and becomes the innermost.

54. (*b*) From figure (2) to (1), the whole figure rotates by 90° clockwise. One and a half petals are lost from anti-clockwise side and half a petal is added to its clockwise side in the same manner as it was on the anti-clockwise side.

55. (*c*) From figure (2) to (1), every element rotates in certain manner and shifts by a fixed pattern as given here



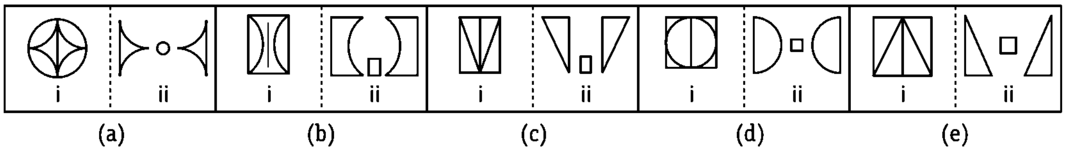
Type 2 Finding the Odd Pair of Figures

In this type of questions, five pairs of figures are given. All the pairs except one follow a certain rule on the basis of which a relationship between two figures in each of the pairs is established. One pair out of five pairs does not show this relationship and this pair is to be selected by the candidate as the answer.

Following examples will illustrate the type of such extension of analogy

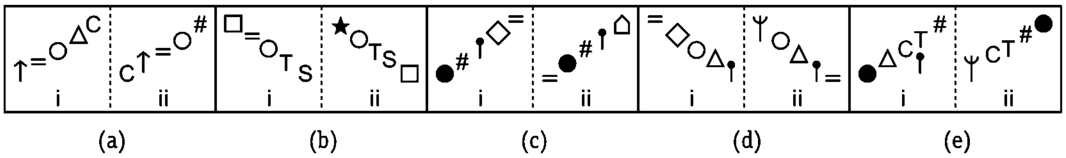
Directions (Example Nos. 14-18) In the following questions, element (ii) is related to element (i) in a particular way in four pairs of figures out of the given five. Find out the pair of figures in which the element (ii) is not related to element (i).

***Ex* 14**



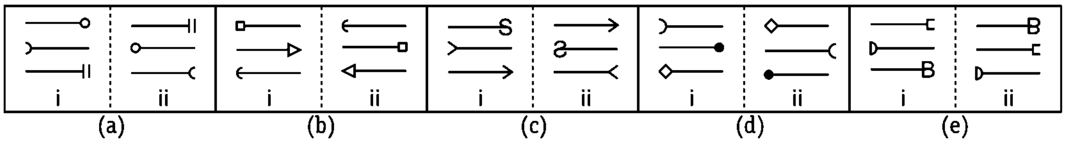
Sol. (c) In all pairs of figures except pair (c), the inner figure is divided into two halves and each half is reversed at the same position and the outer figure comes between the two halves.

***Ex* 15**



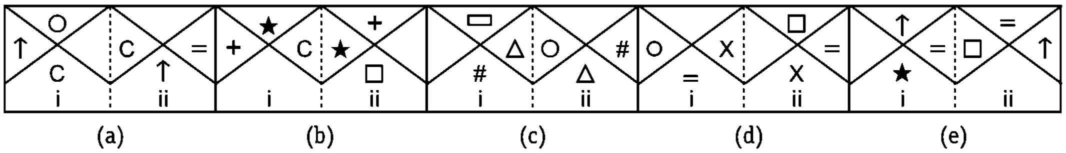
Sol. (e) The symbol at the top shifts to bottom position and a new symbol replaces the symbol at the top position. All other symbols shift one step upward. The pair (e) does not follow this rule.

***Ex* 16**



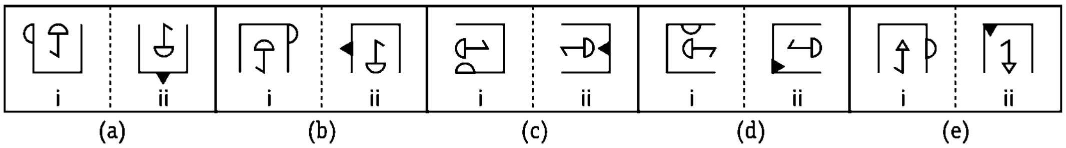
Sol. (e) First figure, counting from bottom, occupies third position and second and third figures occupy first and second positions respectively and are laterally inverted at new positions. All the pairs except pair (e) follow this rule.

***Ex* 17**



Sol. (c) Two symbols in clockwise direction interchange positions and the third symbol moves one step in the clockwise direction and gets changed to a new element. (c) does not follow this rule.

***Ex* 18**



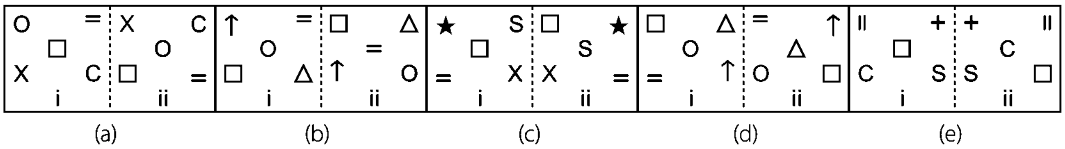
Sol. (e) In each pair of figures, except pair (e), the design on the boundary of the main figure moves one and half side anti-clockwise and is converted into new shaded design in such a way that design outside the boundary remains outside and design inside the boundary remains inside. Pair (e) does not follow this rule.

Practice Corner **2.2**

Build your Confidence...

Directions (Q. Nos. 1-46) In the following questions, element (ii) is related to element (i) in a particular way in four pairs of figures out of the given five. Find out the pair of figures in which the element (ii) is not related to element (i).

1.



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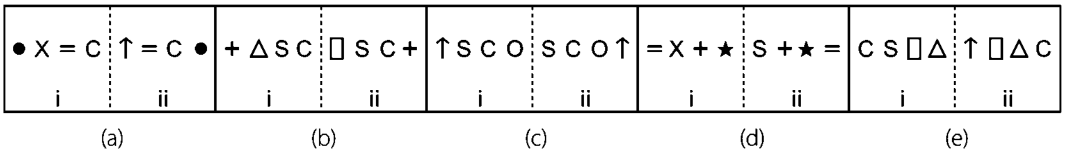

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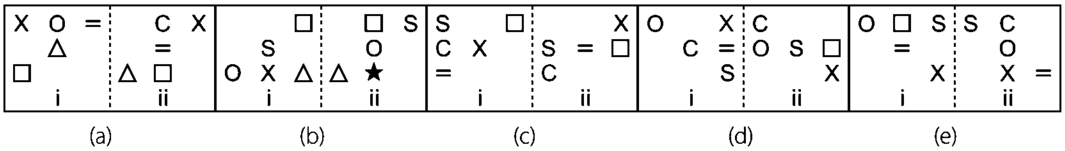

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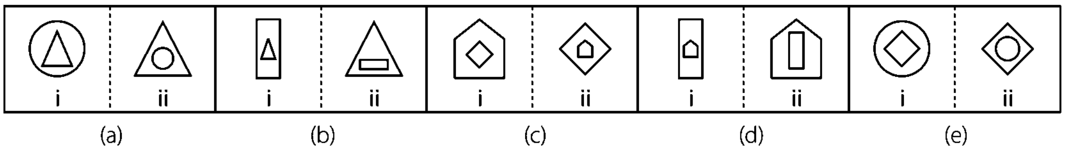

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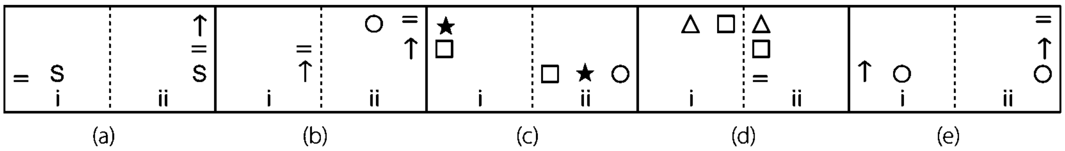

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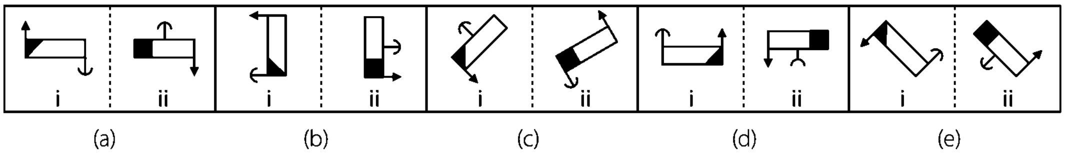

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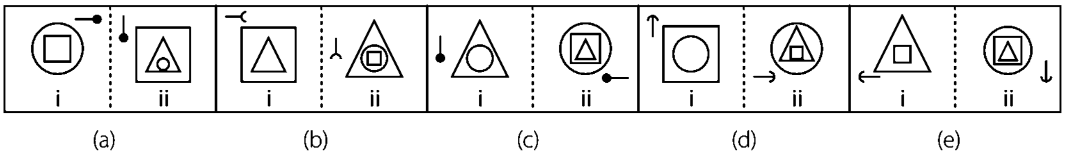

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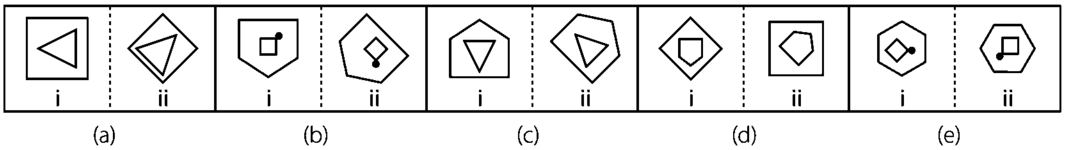

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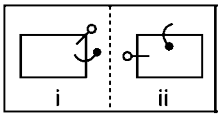
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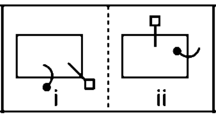
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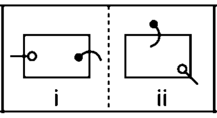
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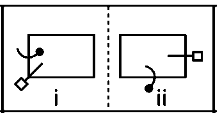
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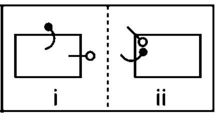
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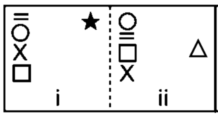
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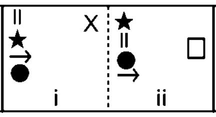
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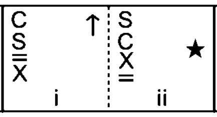
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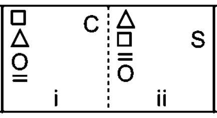
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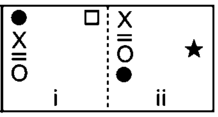
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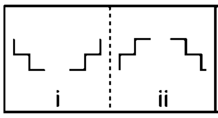
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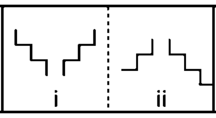
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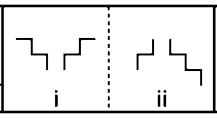
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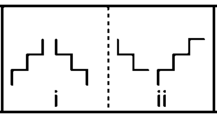
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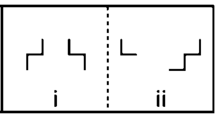
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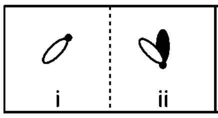
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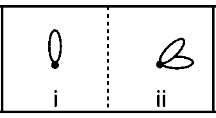
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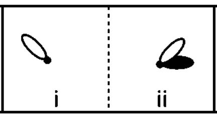
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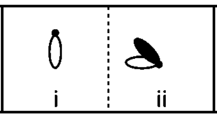
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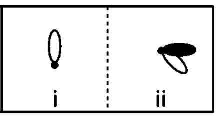
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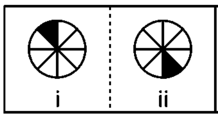
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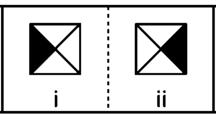
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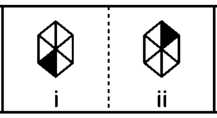
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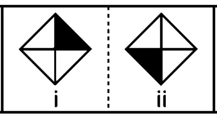
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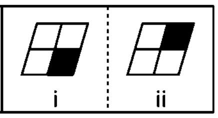
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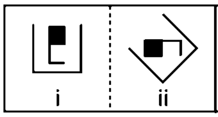
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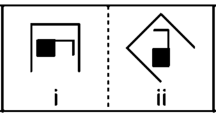
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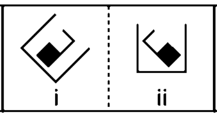
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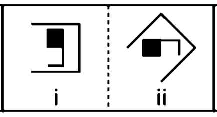
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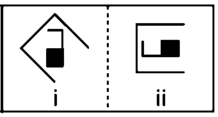
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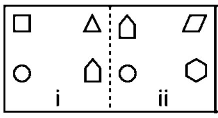
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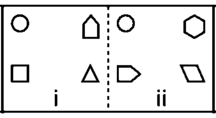
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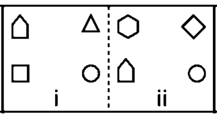
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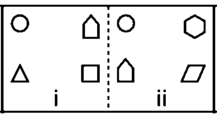
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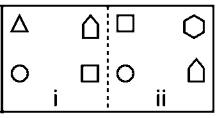
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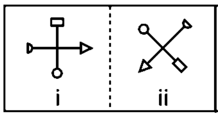
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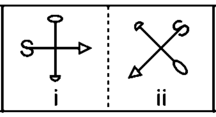
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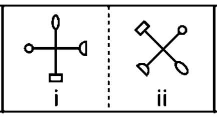
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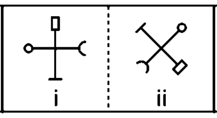
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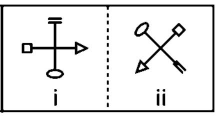
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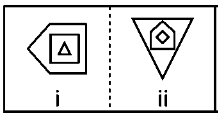
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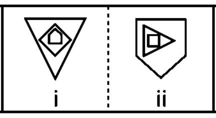
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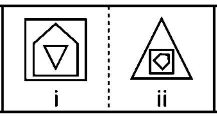
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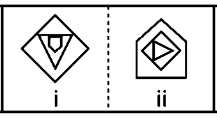
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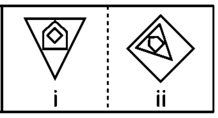
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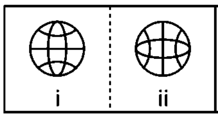
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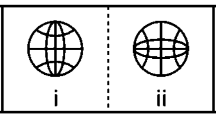
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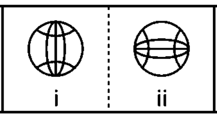
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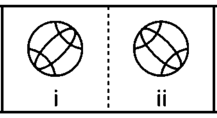
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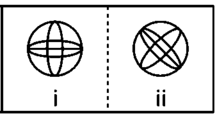
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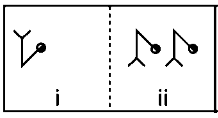

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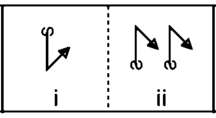

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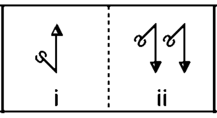

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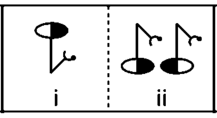

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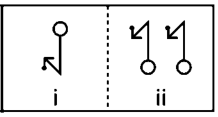

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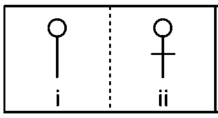

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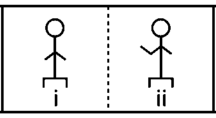

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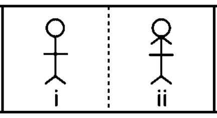

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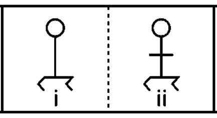

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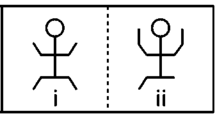

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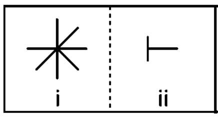

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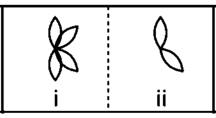

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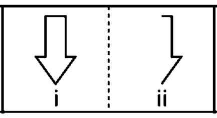

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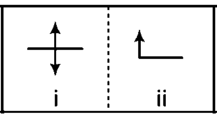

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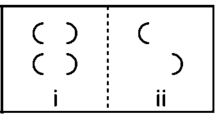

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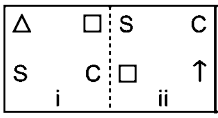

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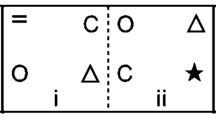

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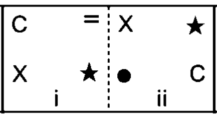

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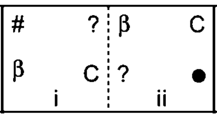

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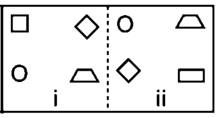

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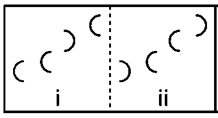

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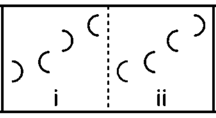

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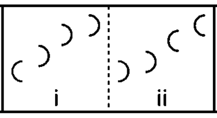

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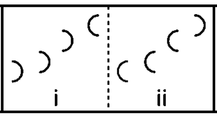

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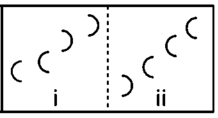

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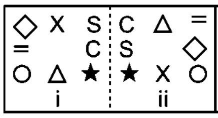

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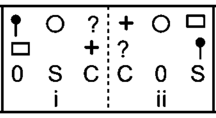

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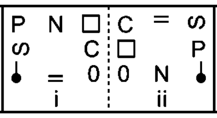

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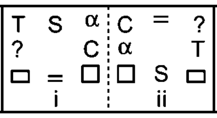

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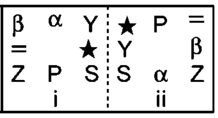

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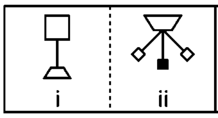

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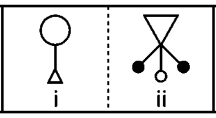

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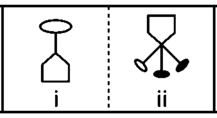

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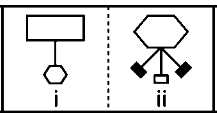

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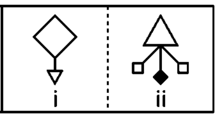

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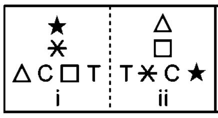

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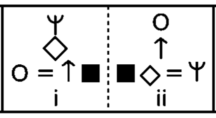

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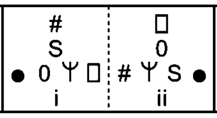

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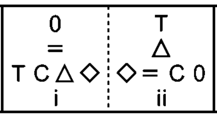

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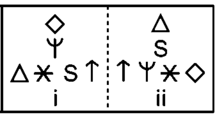

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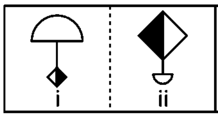

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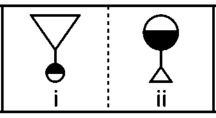

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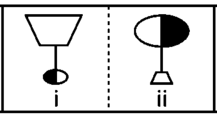

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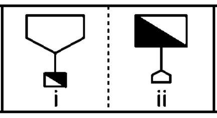

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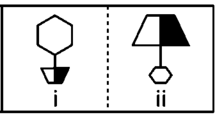

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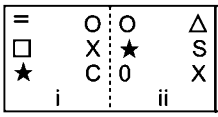

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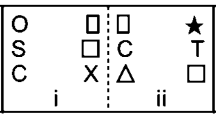

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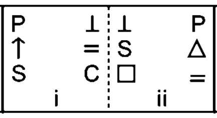

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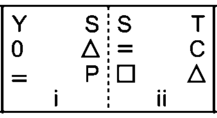

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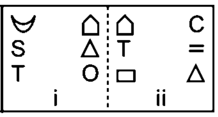

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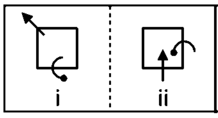

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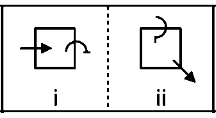

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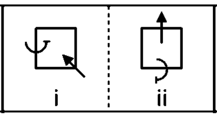

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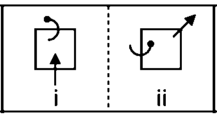

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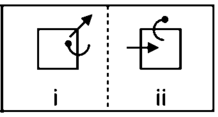

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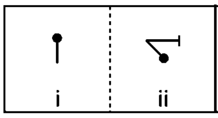

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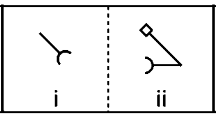

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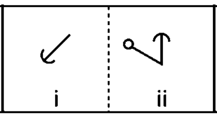

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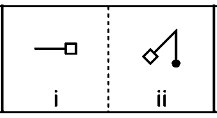

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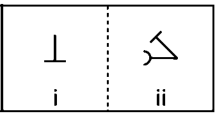

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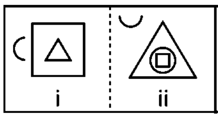

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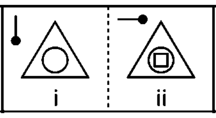

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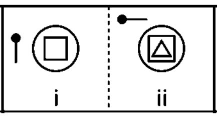

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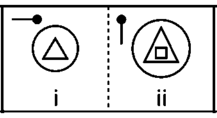

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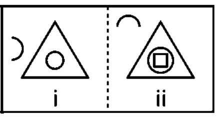

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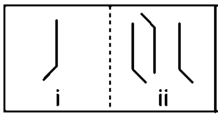

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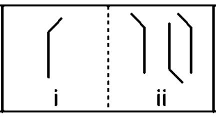

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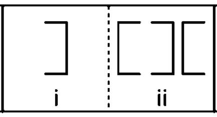

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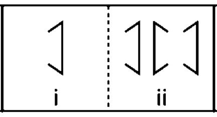

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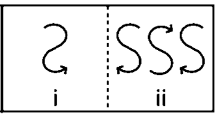

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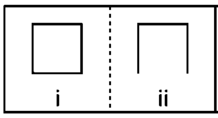

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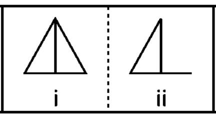

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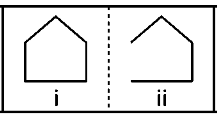

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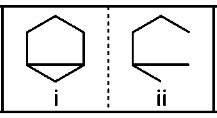

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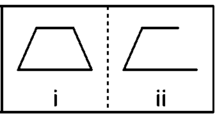

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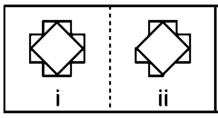

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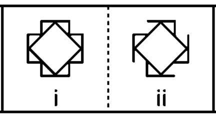

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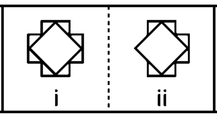

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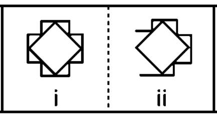

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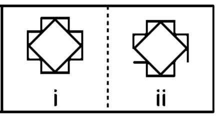

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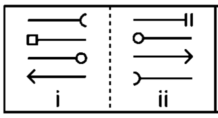

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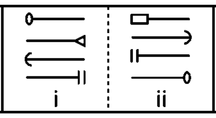

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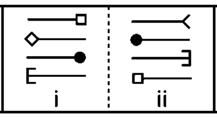

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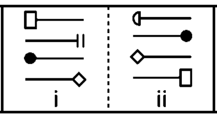

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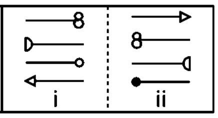

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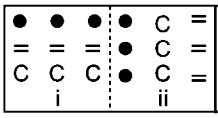

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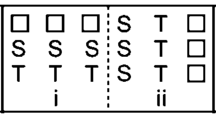
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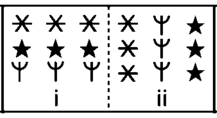

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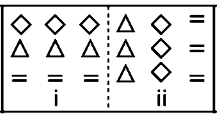

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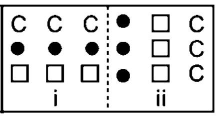

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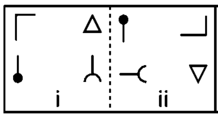

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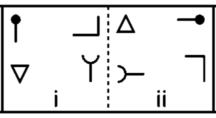

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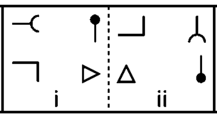

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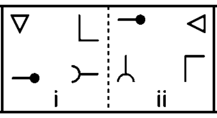

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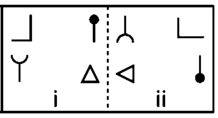

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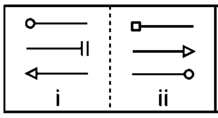

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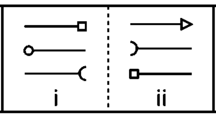

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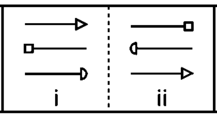

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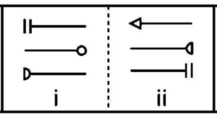

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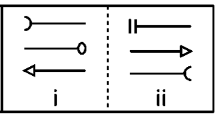

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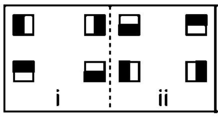

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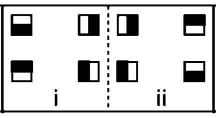

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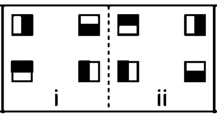

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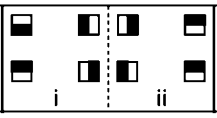

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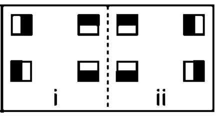

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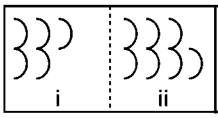

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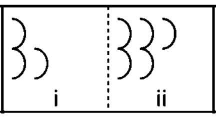

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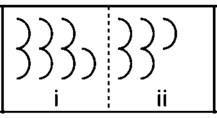

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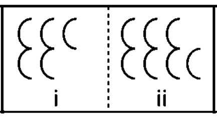

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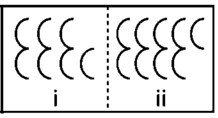

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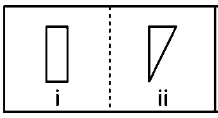

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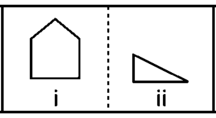

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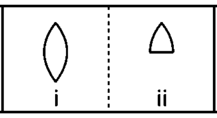

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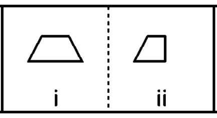

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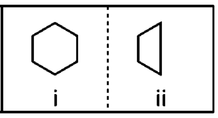

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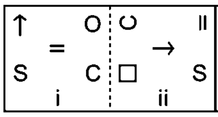

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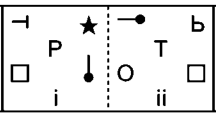

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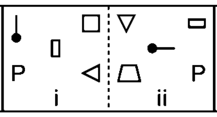

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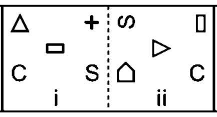

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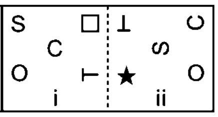

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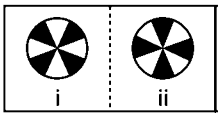

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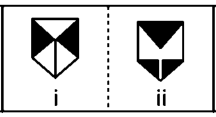

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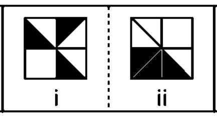

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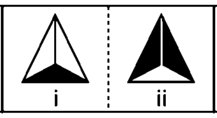

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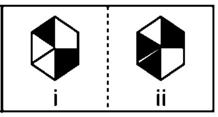

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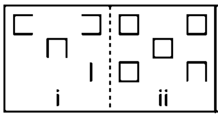

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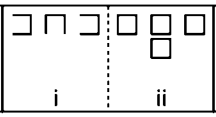

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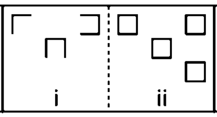

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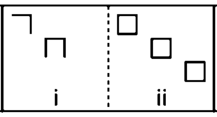

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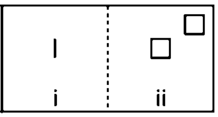

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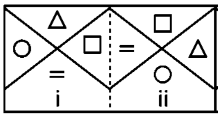

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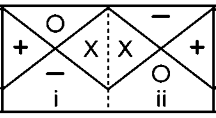

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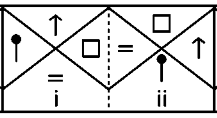

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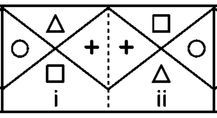

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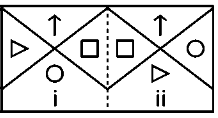

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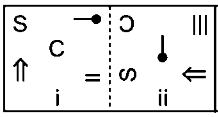

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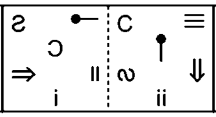

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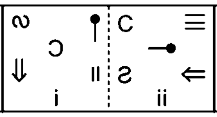

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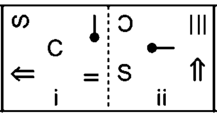

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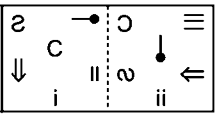
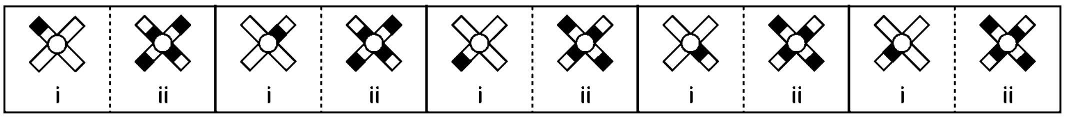


(e)

Directions (Q. Nos. 47-55) In each of the following questions, in four out of the five figures, element (i) is related to element (ii) in the same particular way. Find out the figure in which element (i) is not so related to element (ii).

47.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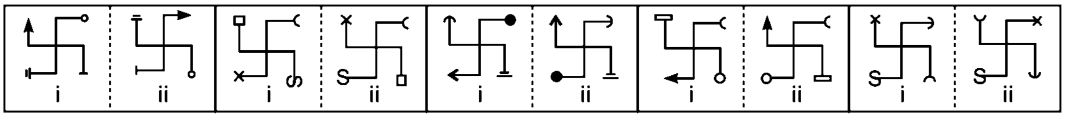
(a) (b) (c) (d) (e) **[SBI (PO) 2010]**

48.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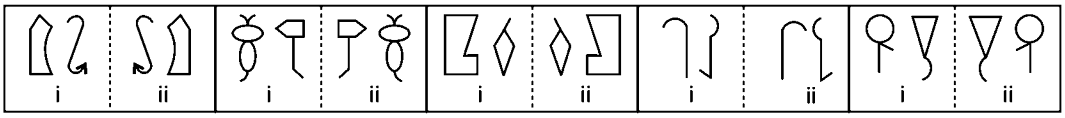
(a) (b) (c) (d) (e) **[PNB (PO) 2010]**

49.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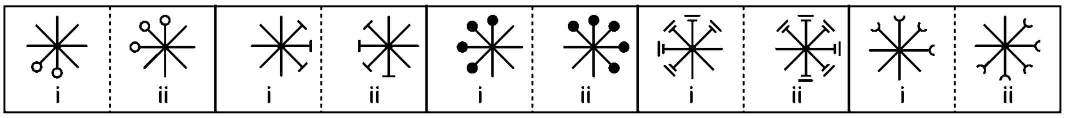
(a) (b) (c) (d) (e) **[OBC (PO) 2010]**

50.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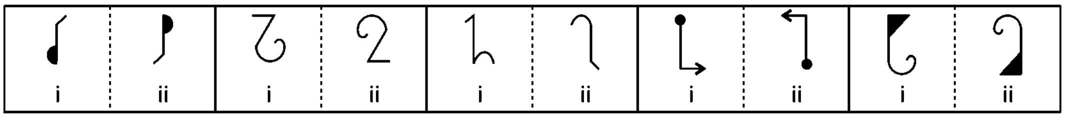
(a) (b) (c) (d) (e) **[BOB (PO) 2010]**

51.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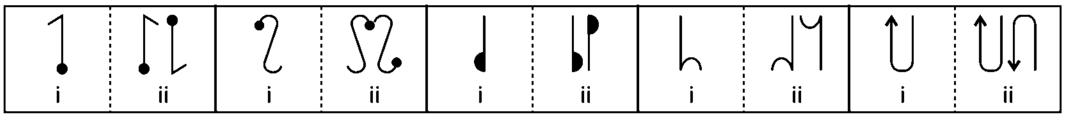
(a) (b) (c) (d) (e)

52.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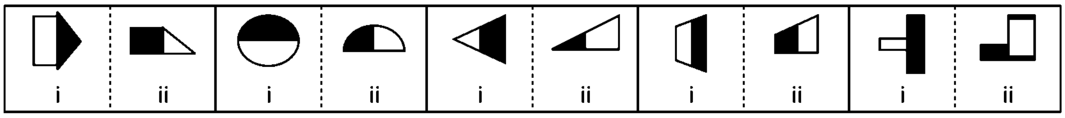
(a) (b) (c) (d) (e) **[IOB (PO) 2008]**

53.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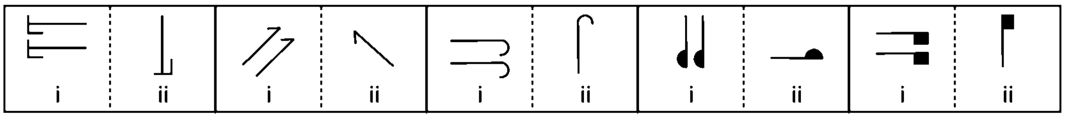
(a) (b) (c) (d) (e)

54.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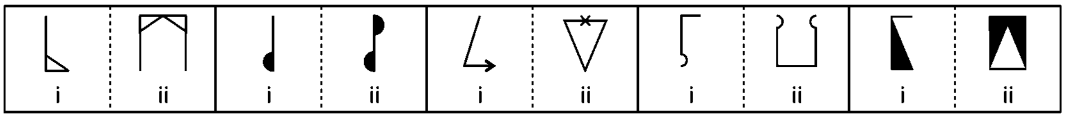
(a) (b) (c) (d) (e) **[Andhra Bank (PO) 2008]**

55.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(a) (b) (c) (d) (e) **[PNB (PO) 2008]**

Response & Interpretations **(2.2)**

1. (*d*) In all other figures, three symbols change positions clockwise or anti-clockwise and other two symbols interchange positions.

2. (*c*) In all other figures, first, second, third and fourth symbols (counting from the left side) become fourth, first, second and third symbols, respectively and symbol at the first position is replaced by a new symbol.

3. (*c*) In all other figures, all the symbols interchange their positions and one of the symbols is replaced by a new symbol.

4. (*b*) In all the other pairs, both the figures interchange positions in such a way that the outer figure remains big and the inner figure remains small in size.

5. (*b*) In all other pairs, first symbol (counting from the clockwise direction) moves half a side anti-clockwise, second symbol moves one and half side anti-clockwise and a new symbol appears ahead of the two symbols.

6. (*d*) In all other pairs, shaded portion inside the rectangle is doubled, the arrow shifts to the other side of the rectangle and get inverted at the new position and the arrow with arc head shifts half side and get inverted at the new position.

7. (*e*) In all other pairs, the outer figure becomes the innermost figure, the innermost figure becomes the outermost figure and a new figure appears in the middle.

8. (*d*) The outer figure rotates through 45° clockwise and the inner figure rotates through 135° clockwise in all other pairs except pair (d).

9. (*d*) In all the other figures, the pin with blank circle or square rotates through 135° anti-clockwise and moves one and half side anti-clockwise. The arc with shaded circle rotates through 90° clockwise and travels one side anti-clockwise.

10. (*e*) In all other figures, the upper two symbols and lower two symbols interchange positions. The single symbol on the right hand side shifts half side downwards and is replaced by a new symbol.

11. (*a*) In all other figures, line segments on both sides rotate through 180° in such a way that the left side segment loses one line and right segment gains one line at the bottom portion.

12. (*b*) In all other figures, one shaded leaf is added, whereas in figure (b), one blank leaf is added.

13. (*e*) In all other figures, shaded portion moves to the opposite side.

14. (*d*) The outer figure rotates through 45° anti-clockwise and inner figure rotates through 90° anti-clockwise and gets reversed at the new position.

15. (*d*) In all other figures, one side is added in every geometrical figure except the circle.

16. (*c*) In all other figures, all the symbols at the ends of arrows rotate through 135° clockwise and one of the symbols at the end of top arrow changes its position by 90° at the new position.

17. (*e*) In all the other figures, the outer figure comes in the middle, middle figure comes at the innermost position and the inner most figure becomes the outermost figure and, in all other figures, the middle figure rotates 45° in clockwise direction.

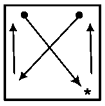
18. (*e*) In all other pairs, design inside the figure rotates through 90° clockwise/anti-clockwise.

19. (*d*) In all other pairs, figure gets inverted and appears in pairs.

20. (*b*) In all other pairs, a line segment is added on both side of the second figure.

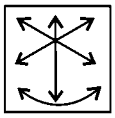
21. (*a*) In all other pairs, the figure becomes half of itself.

22. (*c*) In all other pairs, all the symbols change positions as shown in the diagram and a new symbol replaces the symbol in place of *



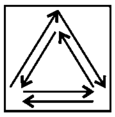
23. (*d*) In all other pairs, all the semi-circles except second, counting from bottom, rotate through 180°.

24. (*b*) In all other pairs, all the symbols interchange positions as shown in the diagram.



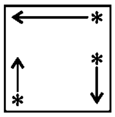
25. (*c*) In all other pairs, the figure gets inverted in such a way that larger portion of the figure becomes smaller and smaller portion becomes larger and either middle figure or figures at sides get shaded.

26. (*c*) In all other pairs, all the symbols change positions as shown in the diagram.



27. (*e*) In all other pairs, the figure gets inverted in such a way that larger portion of the figure becomes smaller and the smaller portion becomes larger and shaded portion shifts to the other side.

28. (*c*) In all other pairs, all the symbols change positions as shown in the diagram and symbols in place of * are replaced by new symbols.



29. (*c*) In all other pairs, the arrow rotates through 45° clockwise and moves one and half sides in anti-clockwise direction and the arc on the circumference of the square first rotates through 90° clockwise and then moves one side anti-clockwise.

30. (*b*) In all other pairs, the existing design rotates through 135° clockwise and a new design is added to the existing design 45° anti-clockwise. In pair (b), a new design is added to the existing design 45° clockwise, hence is different from others.

31. (*a*) In all other pairs, design outside the main figure rotates through 90° anti-clockwise and a new design appears inside the main figure.

32. (*d*) In all other pairs, the existing design gets reversed and appears in pairs. Also, new design which is obtained by inverting the existing design appears in the middle.

33. (*d*) In all other pairs, one side of the figure is deleted.

34. (*e*) In all other pairs, four small lines from outside the main figure are deleted.

35. (*e*) In all other pairs, first, second, third and fourth arrows, counting from bottom occupy second, third, fourth and first positions, respectively in such a way that each arrow is inverted at the new position and arrow at the fourth position is replaced by a new arrow.

36. (*d*) In all other pairs of figures, the bottom row becomes the central column and other two rows becomes the left and right column.

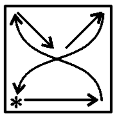
37. (*a*) In all other pairs of figures, the symbol at the top left position rotates through 90° clockwise and occupies top right position, the symbol at the top right position gets vertically inverted and occupies the bottom right position, the symbol at the bottom left position gets vertically inverted and occupies the top left position.

38. (*c*) In all other pairs, first, second and third arrows, counting from bottom occupy second, third and first positions, respectively in such a way that every arrow gets inverted at the new position and arrow at the third position is replaced by a new arrow.

39. (*d*) In all other pair of figures, all the squares rotate through 90° anti-clockwise.

40. (*c*)

In all other pairs, two semi-circles are added to the previous figure.



41. (*b*) In all other pairs of figures, half portion of the geometrical figure is deleted.

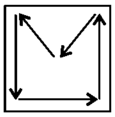
42. (*b*) In all other pair of figures, all the symbols change positions as shown in the diagram in such a way that the symbol at the top left position rotates through 90° clockwise, symbol at central position rotates through 90° anti-clockwise, symbol at bottom right position rotates through 90° anti-clockwise and symbol at top right position is replaced by a new symbol at the new position marked by *.

43. (*c*) In all other pair of figures, black portion of the figure becomes white and white portion becomes black.

44. (*a*) In all other pair of figures, all incompleted squares get completed and a new square is added.

45. (*e*) In all other figures, two figures interchange positions and other two also interchange positions.

46. (*a*) In all other figures, all the symbols interchange positions as shown in the diagram in such a way that symbol at the top left position rotates through 90° anti-clockwise, the symbol at the top right position rotates through 90° clockwise, the symbol at the bottom left position rotates through 90° clockwise, the symbol at the bottom right position rotates through 90° clockwise with an addition of one line and the symbol at the central position rotates through 180°, at their new positions, respectively.



47. (*e*) The shading of the half-shaded rectangle is changed and the remaining rectangles also get half shaded.

48. (*a*) Two of the four elements shift one step clockwise and one element shifts two steps clockwise while one of the elements remains fixed at its position.

49. (*d*) In all other pairs, (ii) is the mirror image of (i).

50. (*b*) The whole figure rotates by 90° clockwise and one element is added on clockwise side.

51. (*c*) In all others, (ii) is the 180° rotated form of the (i).

52. (*e*) The LHS is the mirror image while the RHS is the 180° rotated form of the first.

53. (*b*) The second is the horizontal half of the first while the shading is changed.

54. (*d*) The second is the 90° anti-clockwise rotated form of the first and appears as single.

55. (*b*) The LHS of second is the water image of the first while the RHS is the mirror image of the so obtained water image.

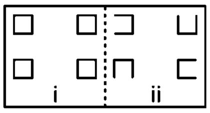
Type 3 Finding a Pair of Similar Figures in Pattern to Original Pair

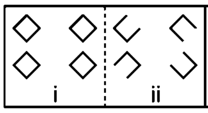
In this type of questions of analogy an original pair of figures is given. This pair shows relationship between two sections containing different figures. This pair is followed by five different pairs of figures as answer pair. Students are required to select one pair out of five pairs which shows the same relationship between two of its sections as shown by the original pair and this pair is the correct answer.

The following examples will help you to understand this types of questions

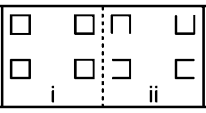
Directions (Example Nos. 19-24) In each of the following questions, a related pair of figures is followed by five numbered pairs of figures. Select the pair that has a relationship similar to that in the original pair. The best possible answer is to be selected from a group of fairly close choices.

***Ex* 19** **Original Pair** **Answer Pairs**

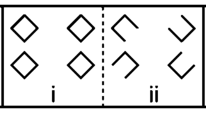




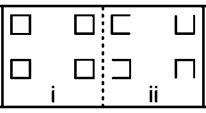
(a)



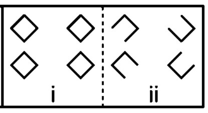
(b)



(c)



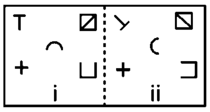
(d)

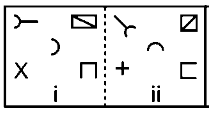


(e)

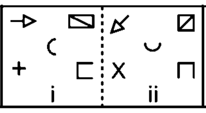
Sol. (*e*) In the original pair, each of the square loses one of its side sequentially starting from anyone of the squares.

***Ex* 20** **Original Pair** **Answer Pairs**

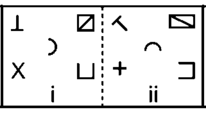




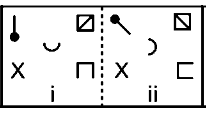
(a)



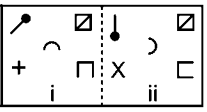
(b)



(c)



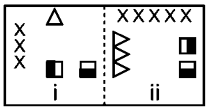
(d)

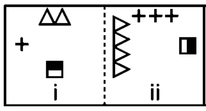


(e)

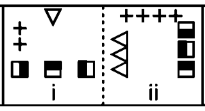
Sol. (*d*) In the original pair, the symbols at the centre and bottom right positions rotate through 90° anti-clockwise, the symbols at top right and bottom left positions rotate through 90° clockwise and the symbol at the top left position rotates through 135° clockwise.

***Ex* 21** **Original Pair** **Answer Pairs**

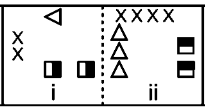




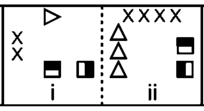
(a)



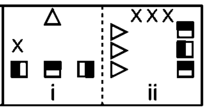
(b)



(c)



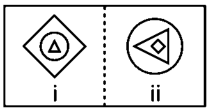
(d)

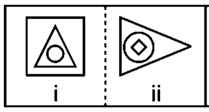


(e)

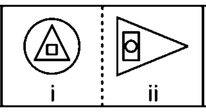
Sol. (*c*) In the original pair, symbols on the left side move one side clockwise and are increased by two in number. The symbols at top positions move one side anti-clockwise after rotating through 90° clockwise and are increased in number by two. The symbols at bottom rotate through 90° anti-clockwise and are arranged in a line on right side.

***Ex* 22** **Original Pair** **Answer Pairs**

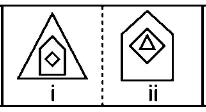




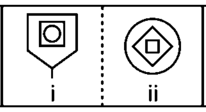
(a)



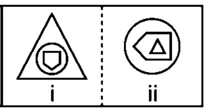
(b)



(c)



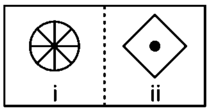
(d)

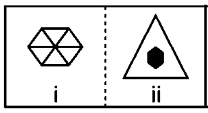


(e)

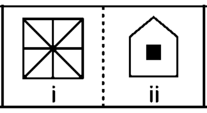
Sol. (*c*) In the original pair, the innermost figure rotates through 90° anti-clockwise and comes in the middle, the outermost figure comes inside the main figure and the figure in the middle becomes the outermost figure.

Ex **23** **Original Pair** **Answer Pairs**

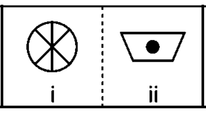




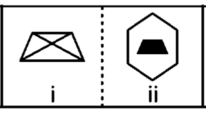
(a)



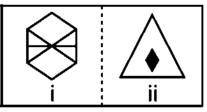
(b)



(c)



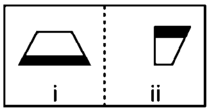
(d)

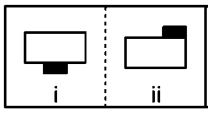


(e)

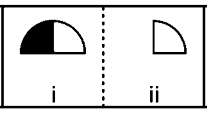
Sol. (*a*) In the original pair, section (ii) contains a figure with as many sides as the number of lines inside the figure in section (i) and the figure in section (i) comes inside the figure of section (ii) after becoming smaller in size with a black background.

Ex **24** **Original Pair** **Answer Pairs**

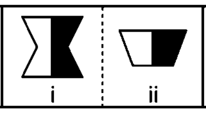




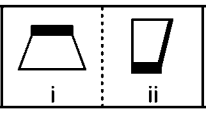
(a)



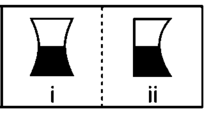
(b)



(c)



(d)



(e)

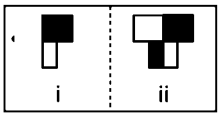
Sol. (*d*) In the original pair, from section (i) to (ii), main figure is first divided into two halves and left half is deleted and right half gets inverted.

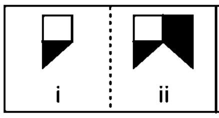
Practice Corner **2.3**

Build your Confidence...

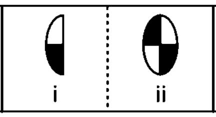
Directions (Q. Nos. 1-26) In each of the following questions, a related pair of figures is followed by five numbered pairs of figures. Select the pair that has a relationship similar to that in the original pair. The best possible answer is to be selected from a group of fairly close choices.

1. Original Pair **Answer Pairs**





(a)



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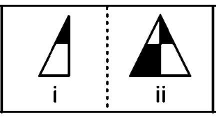
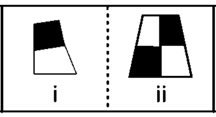
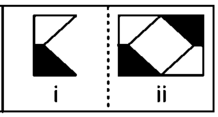


(c)

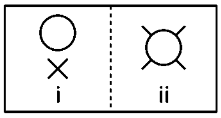


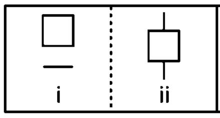
(d)



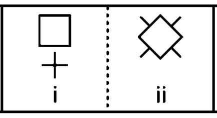
(e)

2.





(a)



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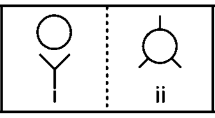
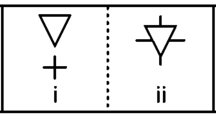


(c)



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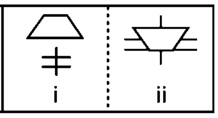
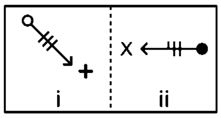
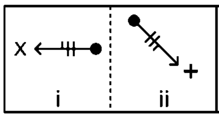


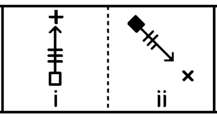
(e)

3.





(a)



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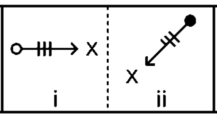

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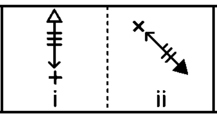

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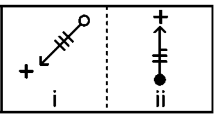
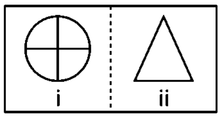
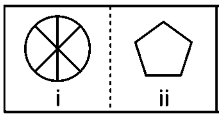


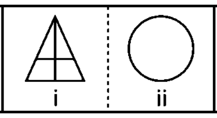
(e)

4.





(a)



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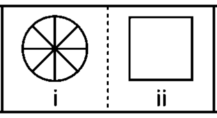

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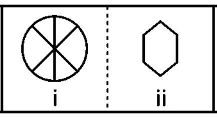

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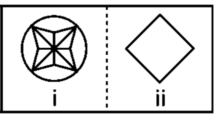
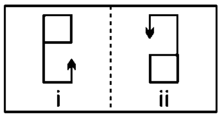
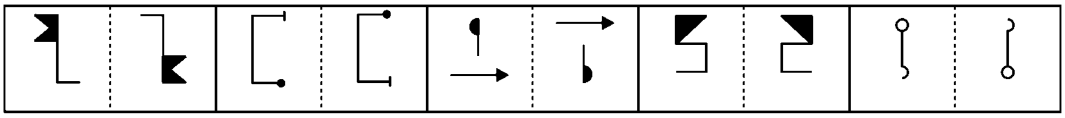


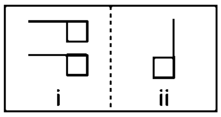
(e)

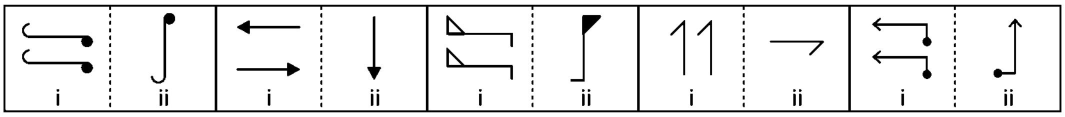
5. Original Pair **Answer Pairs**




(a) (b) (c) (d) (e)

6.

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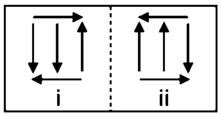
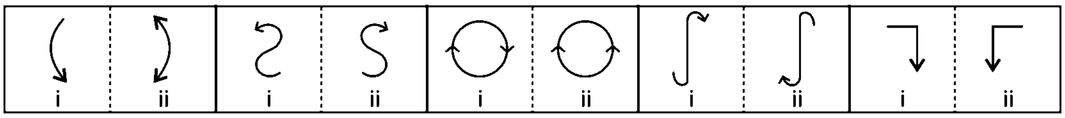
7.

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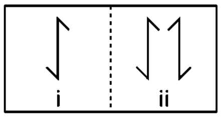

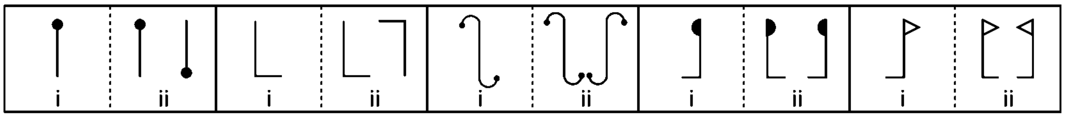
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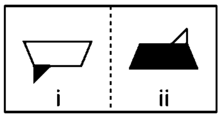
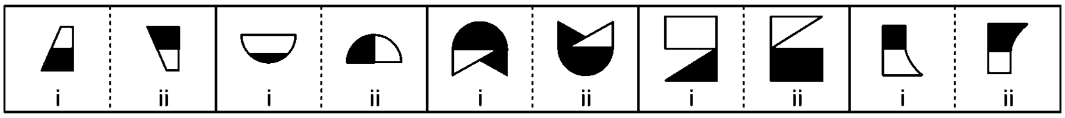
9.

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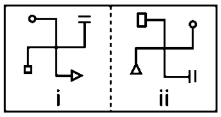
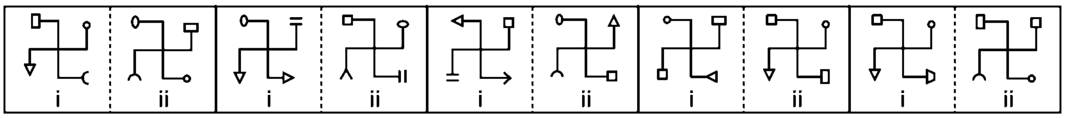
10.

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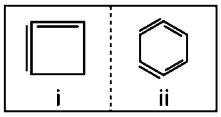
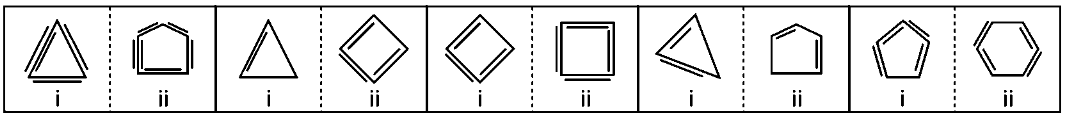
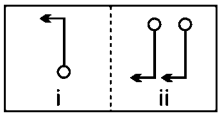
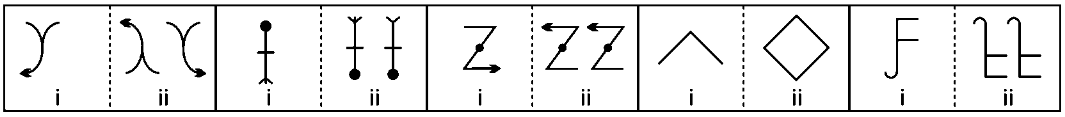
11.



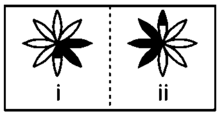

(a) (b) (c) (d) (e)

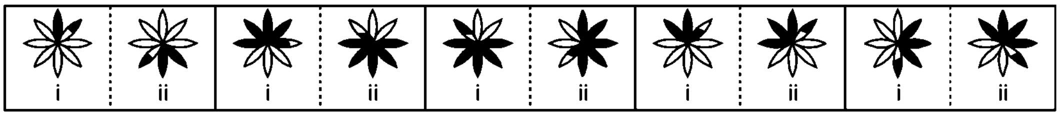
12.




(a) (b) (c) (d) (e)

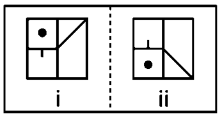
13.

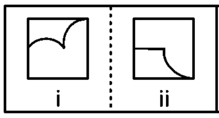



(a) (b) (c) (d) (e)

[IDBI (PO) 2008)]

14. Original Pair **Answer Pairs**





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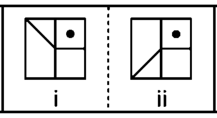
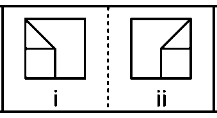
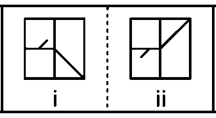


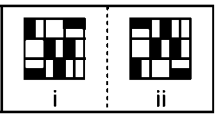
(b)



(c)

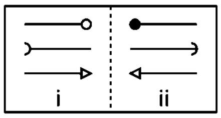


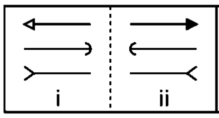
(d)



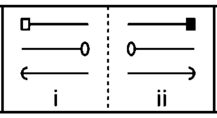
(e)

15.

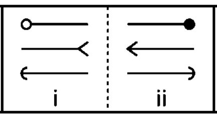




(a)



(b)



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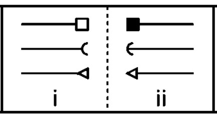
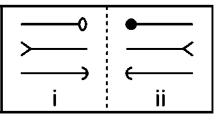
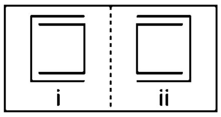


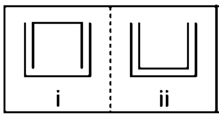
(d)



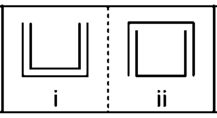
(e)

16.





(a)



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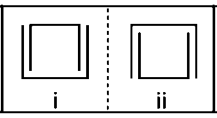
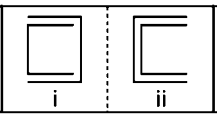
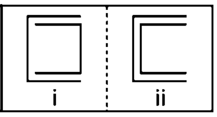


(c)

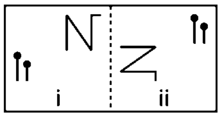


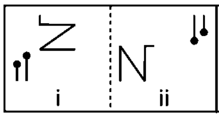
(d)



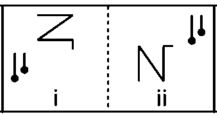
(e)

17.

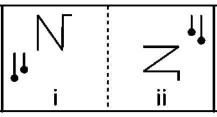




(a)



(b)



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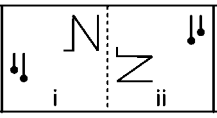
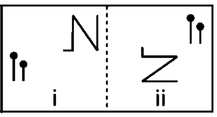
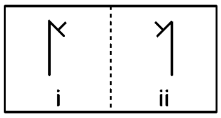


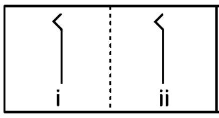
(d)



(e)

18.





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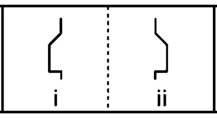

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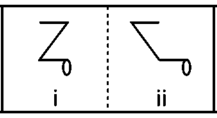

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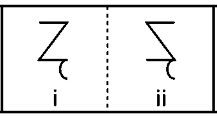

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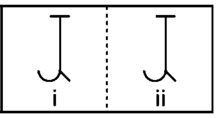

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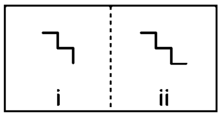

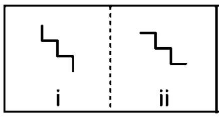

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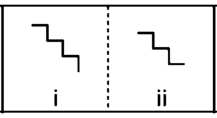

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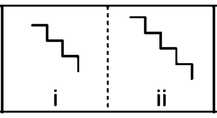

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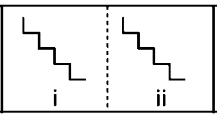

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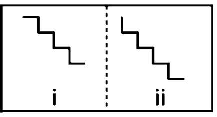

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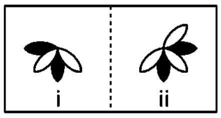

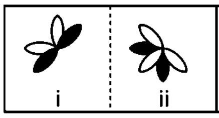

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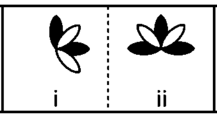

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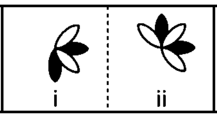

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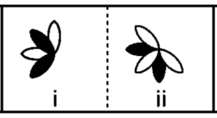

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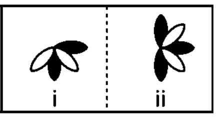

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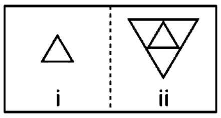

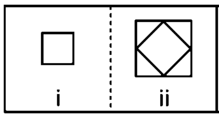

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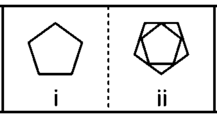

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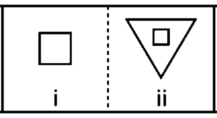

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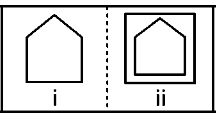

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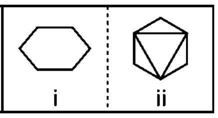

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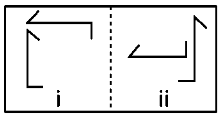

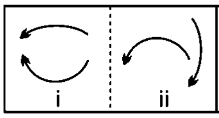

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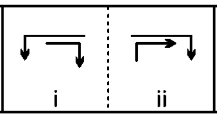

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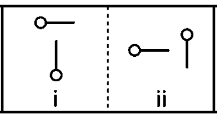

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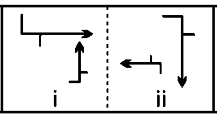

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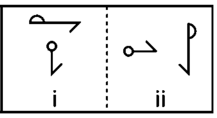

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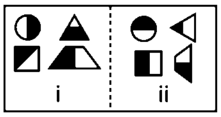
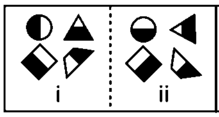
23. Original Pair **Answer Pairs**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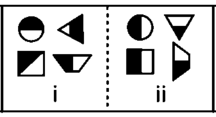
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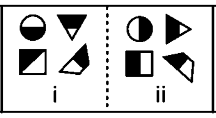
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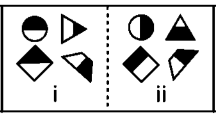
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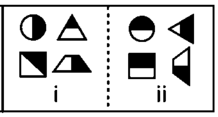
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[Andhra Bank (PO) 2010]

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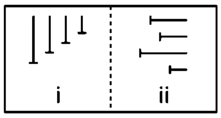
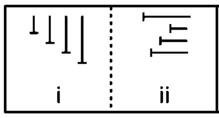
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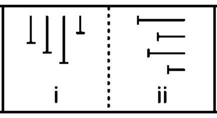
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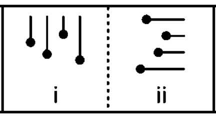
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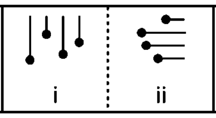
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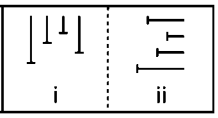
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[Canara Bank (PO) 2010]

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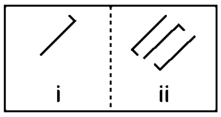
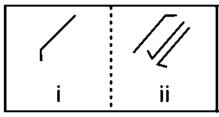
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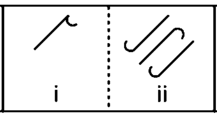
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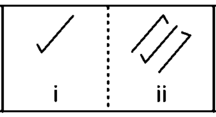
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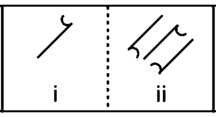
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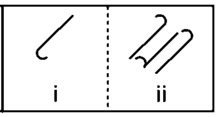
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[Allahabad Bank (PO) 2010]

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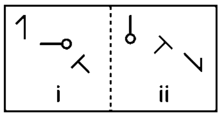
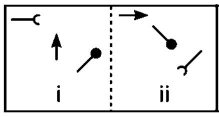
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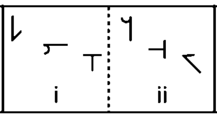
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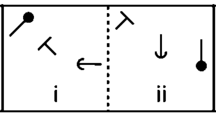
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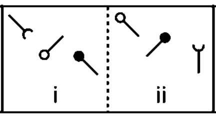
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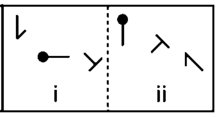

(e)

[OBC (PO) 2007]

Response & Interpretations **(2.3)**

1. (*d*) The mirror image of the figure is added to the LHS with a different shading.

2. (*d*) The line segments of the lower element are attached to the upper element.

3. (*d*) The arrow rotates through 135° clockwise in a such a way that one line from bottom side of the arrow is deleted and circle on the back of it become shaded.

4. (*a*) The number of sides in the figure in section (ii) is one less than the number of radii in the circle present in section (i) of the original pair.

5. (*a*) The figure in section (ii) is obtained by rotating the figure of section (i) in the original figure through 180°.

6. (*e*) Figure in section (i) of the original pair is rotated through 90° clockwise and one of the figures is removed and thus the resultant figure appears in section (ii).

7. (*d*) All the arrows in section (i) rotate through 180° and thus the resultant figure appears in section (ii).

8. (*c*) In section (ii), the original figure of section (i) appears along with its laterally inverted image on its right hand side.

9. (*d*) The figure from section (i) to section (ii) rotates through 180° in such a way that black portion of the figure becomes white and white portion of the figure becomes black.

10. (*c*) The figure rotates through 90° clockwise in such a way that symbols attached to the upper portion of the figure remain unchanged and symbols attached with the lower portion of the figure get replaced by new symbols.

11. (*a*) Section (ii) of the original pair contains a figure whose sides are two more than that of the figure contained in section (i) and the lines inside and outside of the main figure in section (ii) are two more than that of the lines in section (i).

12. (*e*) The main figure rotates through 180°, gets reversed and appears in pairs.

13. (*a*) The whole figure rotates by 180° clockwise and one extra petal is added to its clockwise side and the shading of the half shaded petal is changed.

14. (*e*) Design inside the square gets inverted from section (i) to (ii) of the original pair.

15. (*c*) All the three arrows get laterally inverted in such a way that head of the top arrow gets shaded, the head of the middle arrow gets reversed and the third arrow remains unchanged.

16. (*c*) Both the designs get laterally inverted from section (i) to section (ii) of the original figure.

17. (*e*) Both the pins move two sides anti-clockwise and the main design rotates through 90° clockwise and shifts to bottom.

18. (*b*) The figure gets laterally inverted from section (i) to section (ii) of the original pair.

19. (*e*) One line segment is added to the existing figure from section (i) to section (ii) of the original pair.

20. (*c*) The main figure rotates through 90° anti-clockwise and a new white leaf is added in the clockwise direction.

21. (*b*) The existing figure gets enlarged and inverted and the original figure get inserted into it from section (i) to (ii).

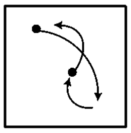
22. (*e*) The lower figure rotates through 90° anti-clockwise and the upper figure rotates through 90° clockwise.

23. (*b*) The upper left, the upper right and the lower right rotate by 90° anti-clockwise. The shading in lower left square rotates by 45° anti-clockwise while the shading of upper right triangle gets changed.

24. (*c*) The whole figure rotates by 90° clockwise. The lower most remains static while the remaining three shift one step upwards.

25. (*d*) The upper is 180° rotated form of (i), the middle is obtained by reversing the arrow head of figure (i) while lower is obtained by 180° rotating the middle one.

26. (*a*) The upper element rotates by 135° clockwise and shifts to lower right. The middle element rotates by 90° clockwise and shifts to upper left while the lower right element rotates by 90° clockwise and goes to the centre.



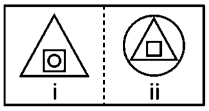
Type 4 Finding the Pair of Figures having Pattern other than the Original Pair

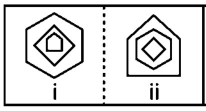
This type of analogy is just opposite in nature to the previous type of analogy. Unlike the previous one, in this type of questions, the candidates are required to select that pair of figures from answer pairs which does not bear the same relationship as shown by the original pair and the number of that pair of figures is the correct answer.

Few examples are given below to explain this type of questions

Directions (Example Nos. 25-27) In each of the following questions, a related pair of figures (original pair) is followed by five numbered pairs of figures. Out of these five, four have relationship similar to that in the original pair. Only one pair of figures does not have similar relationship. Select that pair of figures which does not have a relationship similar to that in the original pair. The number of that pair is your answer.

***Ex* 25** **Original Pair** **Answer Pairs**





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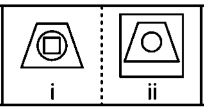

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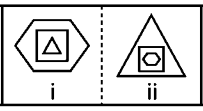

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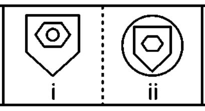

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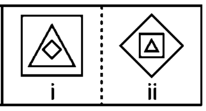
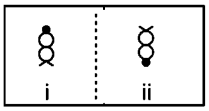
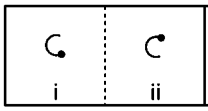


(e)

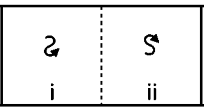
Sol. (c) The innermost figure becomes the outermost figure, the outermost figure comes in the middle and the figure in the middle becomes the innermost figure.

***Ex* 26** **Original Pair** **Answer Pairs**

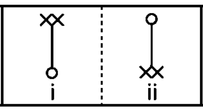




(a)



(b)



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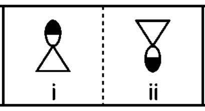

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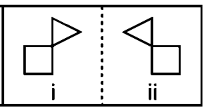
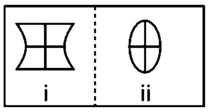
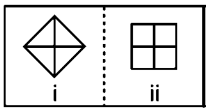


(e)

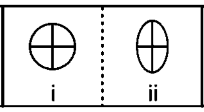
Sol. (*e*) The figure gets inverted.

***Ex* 27** **Original Pair** **Answer Pairs**





(a)



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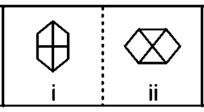

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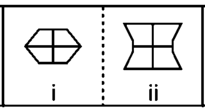

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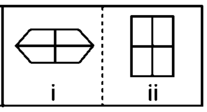


(e)

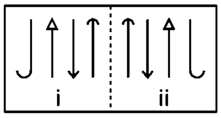
Sol. (c) The main figure is changed into the new figure and lines inside the figure remain perpendicular to each other. In answer figure (c) lines inside the figure do not remain perpendicular to each other and does not follow this rule.

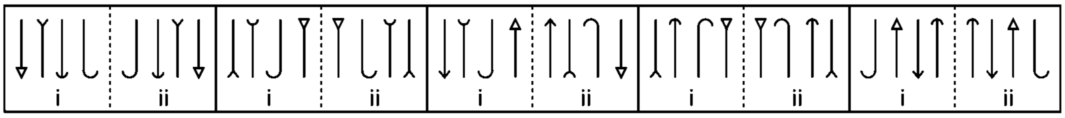
Practice Corner **2.4**

Build your Confidence...

Directions (Q. Nos. 1-28) In each of the following questions, a related pair of figures (original pair) is followed by five numbered pairs of figures. Out of these five, four have relationship similar to that in the original pair. Only one pair of figures does not have similar relationship. Select that pair of figures which does not have a relationship similar to that in the original pair. The number of that pair is your answer.

1. Original Pair **Answer Pairs**

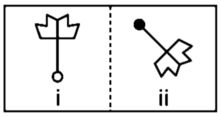


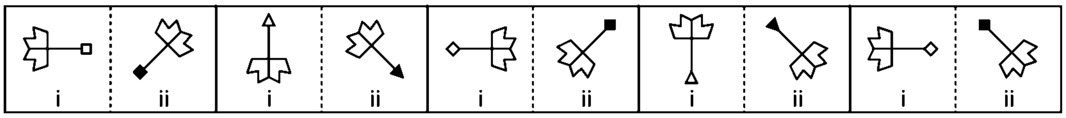


(a) (b) (c) (d) (e)

[Syndicate Bank (PO) 2009]

2.

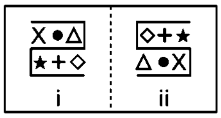


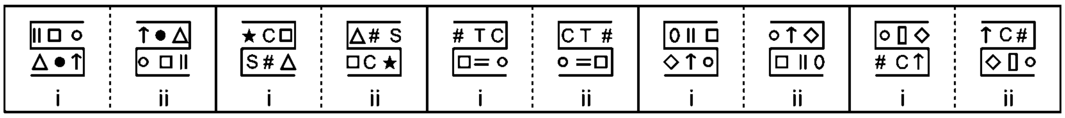


(a) (b) (c) (d) (e)

[Andhra Bank (PO) 2009]

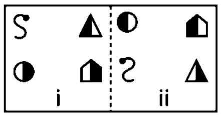
3.

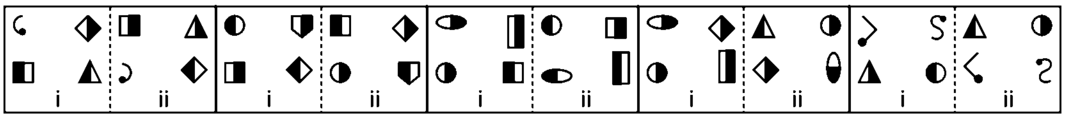




(a) (b) (c) (d) (e)

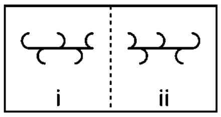
4.

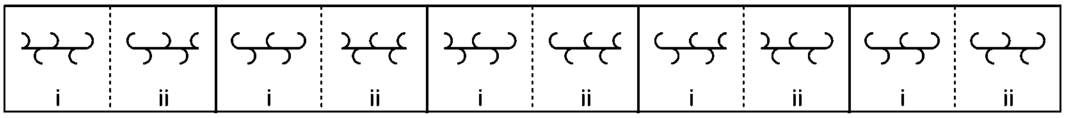




(a) (b) (c) (d) (e)

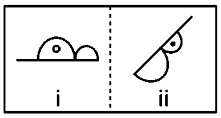
5.

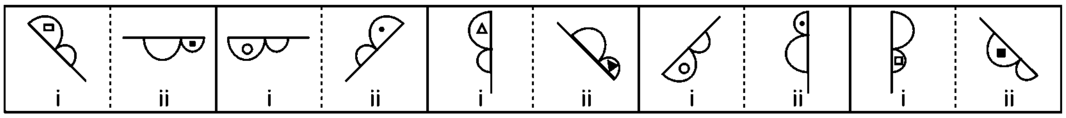




(a) (b) (c) (d) (e)

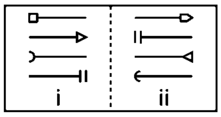
6.

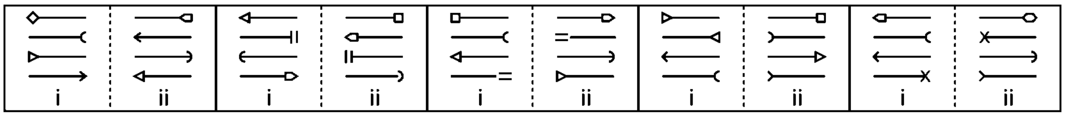




(a) (b) (c) (d) (e)

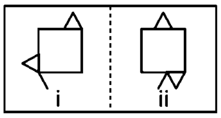
7.

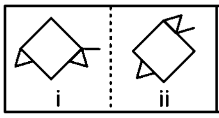




(a) (b) (c) (d) (e)

8. Original Pair **Answer Pairs**





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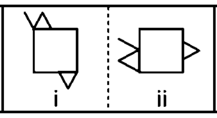

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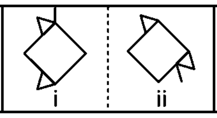

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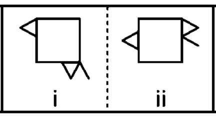

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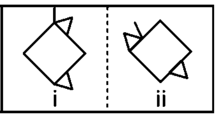
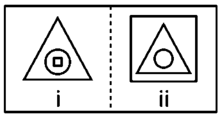
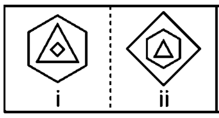


(e)

9.





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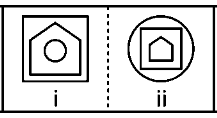

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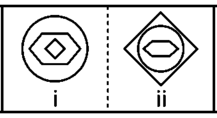

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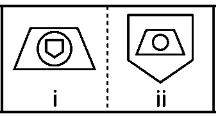

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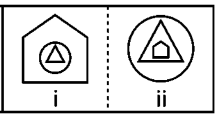

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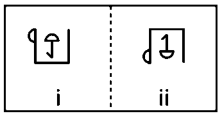

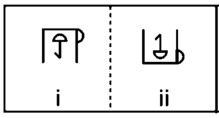

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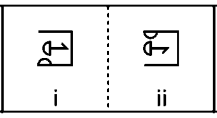

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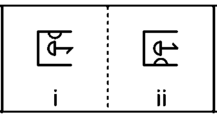

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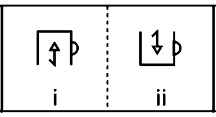

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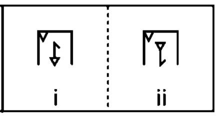

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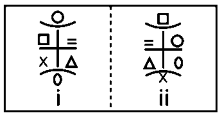

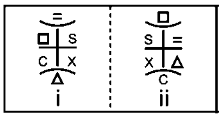

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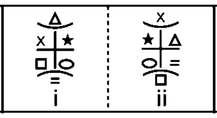

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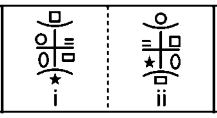

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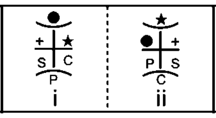

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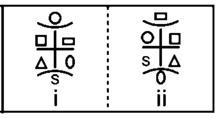

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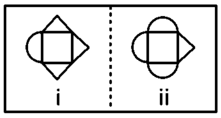

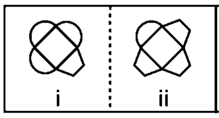

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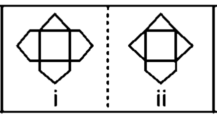

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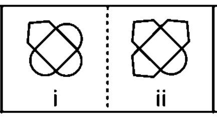

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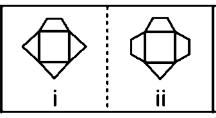

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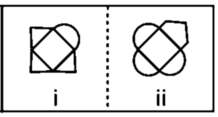

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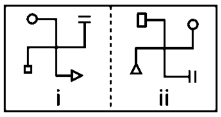

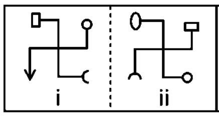

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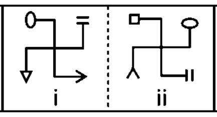

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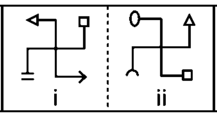

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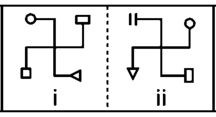

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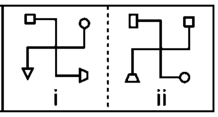

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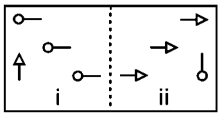
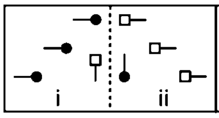
14.





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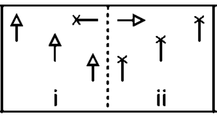

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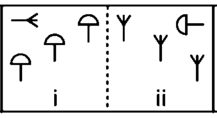

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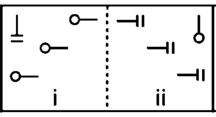

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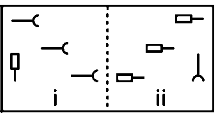

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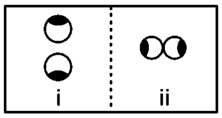
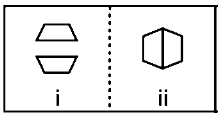
15.





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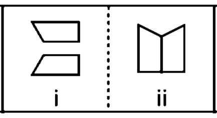

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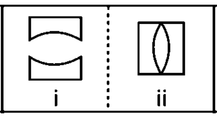

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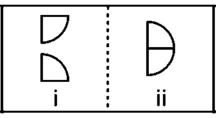
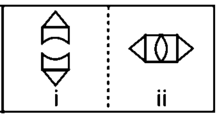


(d)



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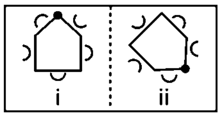

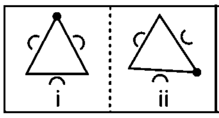

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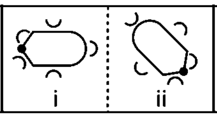

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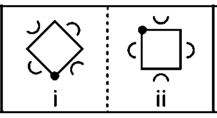

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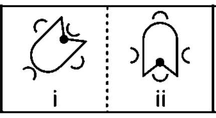

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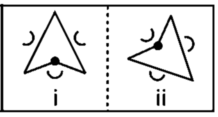

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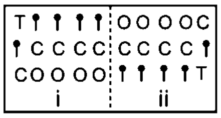
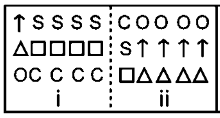
17. Original Pair **Answer Pairs**





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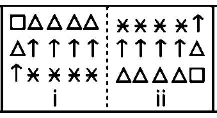

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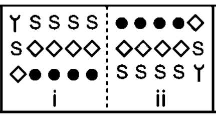

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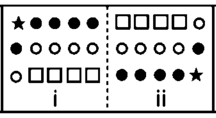

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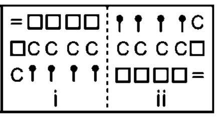
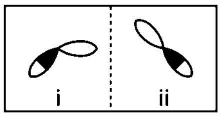
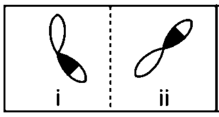


(e)

[UCO Bank (PO) 2009]

18.





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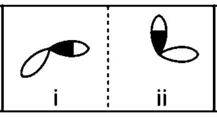

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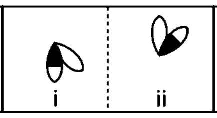

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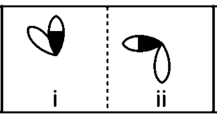

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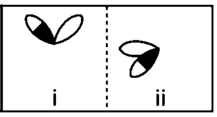
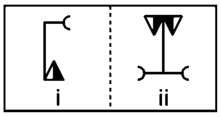
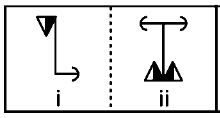


(e)

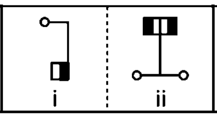
[Punjab & Sind Bank (PO) 2009]

19.





(a)



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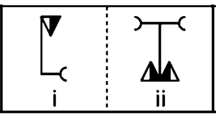

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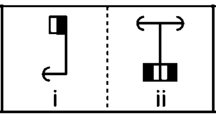

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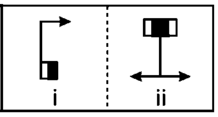
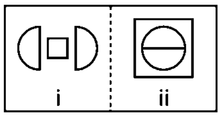
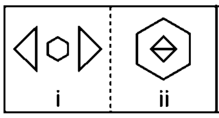


(e)

[BOB (PO) 2009]

20.





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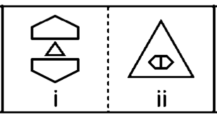

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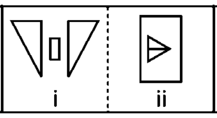

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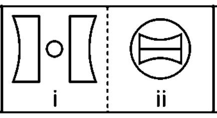

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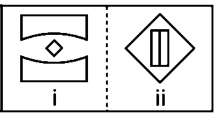

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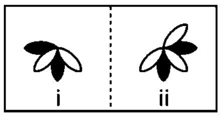

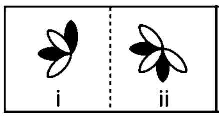

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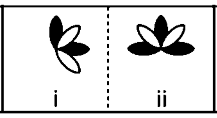

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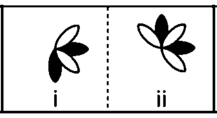

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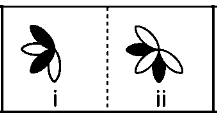

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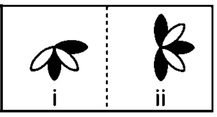

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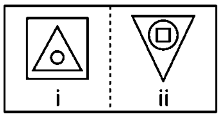

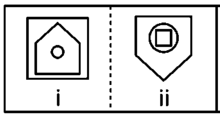

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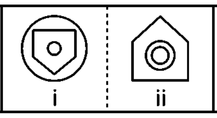

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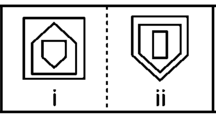

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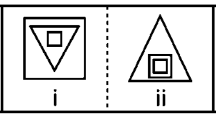

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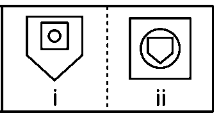

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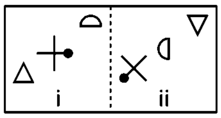

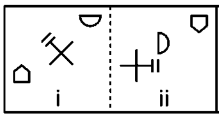

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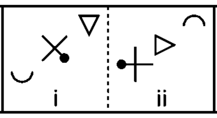

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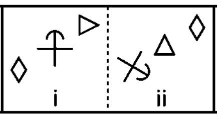

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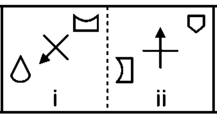

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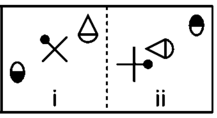

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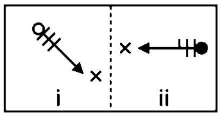

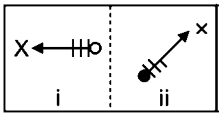

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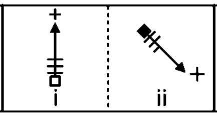

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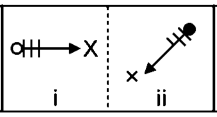

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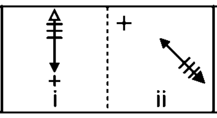

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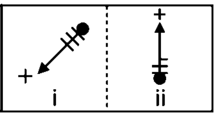

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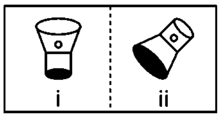
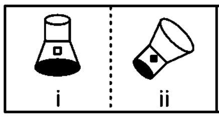
25. **Original Pair** **Answer Pairs**





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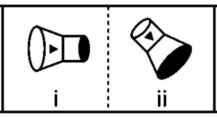

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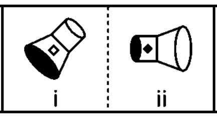

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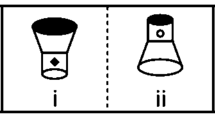

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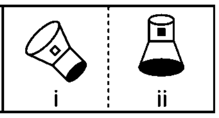

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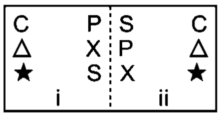

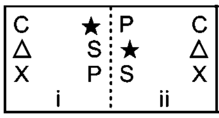

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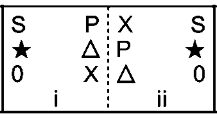

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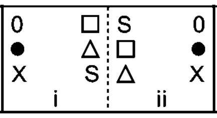

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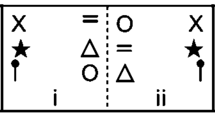

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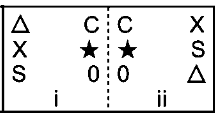

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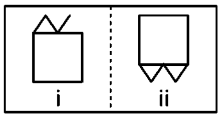
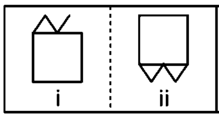
27.





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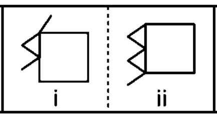

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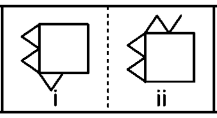

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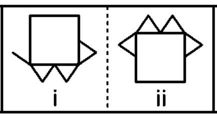

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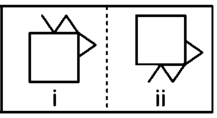
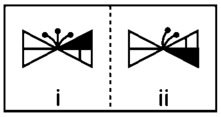
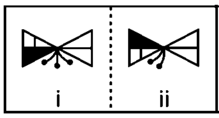


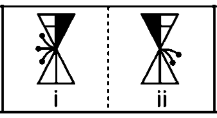
(e)

28.

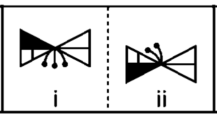




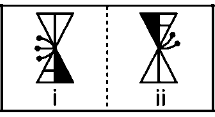
(a)



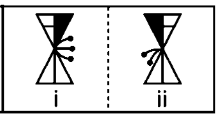
(b)



(c)



(d)



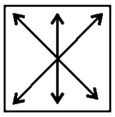
(e)

Response & Interpretations **(2.4)**

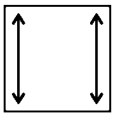
1. (*c*) The first, second, third and fourth symbols, counting from left hand side become fourth, third, second and first symbols, respectively.

2. (*e*) The figure rotates through 135° clockwise in such a way that the head of the pin gets shaded.

3. (*c*) The main design gets reversed and all the symbols inside the design interchange positions as shown in the diagram.



4. (*d*) The symbols interchange positions from section (i) to section (ii) as shown in the diagram in such a way that symbols gets reversed at the new position.



5. (*e*) All the arcs on the line get reversed except the arc present on the upper middle position.

6. (*b*) The main figure rotates through 45° anti-clockwise in such a way that it gets reversed at the new position, the extended line segment shifts to the opposite end and the circle inside the figure also shifts to the small semi-circle and gets black.

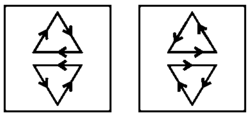
7. (*b*) The first, second, third and fourth arrows, counting from the top position become first, third, fourth and second arrows, respectively in such a way that one side is added to the head of first arrow, the head of second and third arrows get reversed and the fourth arrow gets laterally inverted at the new position.

8. (*c*) Single triangle present on the boundary of the square moves half side anti-clockwise, the other triangle with a line attached to it moves one side in the anti-clockwise direction and gets reversed at the new position. The answer figure (c) does not follow this rule.

9. (*e*) The innermost figure becomes the outermost figure, the middle figure becomes the innermost figure and the outermost figure comes in the middle position.

10. (*e*) The main figure and the design inside it get inverted.

11. (*c*) All the symbols change positions as shown in the diagram or we can say that the upper three elements and the lower three elements interchange positions in opposite directions.



12. (*e*) Three triangles appearing on the boundary of the square are converted into a single triangle and the single semi-circle is converted into three semi-circles.

13. (*a*) The main figure rotates through 90° clockwise in such a way that both the designs appearing on the bottom ends of the figure are converted into new designs at the new positions.

14. (*d*) All the pins shift to the other side and get reversed at new positions in such a way that designs of heads of the pins are also interchanged.

15. (*d*) Both the figures rotate through 90° clockwise and appear on the straight lines adjacent to each other.

16. (*b*) The main figure rotates through 135° clockwise in such a way that all the cups get reversed at the new positions.

17. (*a*) The symbols in the first and third rows interchange positions and get rearranged at the new positions, symbols in the middle row also get rearranged in a particular way.

18. (*c*) The white leaf rotates through 135° anti-clockwise and half shaded leaf rotates through 90° anti-clockwise.

19. (*a*) The figure rotates through 180° and the shaded portion shifts to other side and an identical figure is attached to the pre-existing figure.

20. (*e*) From section (i) to section (ii), the small figure in between two figures gets enlarged and becomes the outer figure. The two similar figures get attached together and rotate through 90° anti-clockwise and come inside the outer figure.

21. (*d*) From section (i) to section (ii), the main figure rotates through 90° anti-clockwise and one leaf is added to the existing figure in the clockwise direction such that if the leaf already present on the clockwise side is black then it must be white in colour or *vice-versa*.

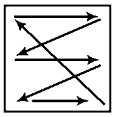
22. (*c*) The innermost figure comes in the middle position, the figure in the middle gets inverted and becomes the outermost figure and the outermost figure becomes the innermost figure.

23. (*d*) The figure at the bottom left position gets inverted and appears at the top right position, the figure in the middle rotates through 135° clockwise and occupies the bottom left position and the figure at the top right position rotates through 90° anti-clockwise and appears in the central position.

24. (*d*) The figure rotates through 135° clockwise in such a way that the circle at the back of it gets shaded and one line segment appearing on the arrow is deleted.

25. (*d*) The main figure rotates through 135° anti-clockwise, whereas in answer figure (d), the figure rotates through 180°.

26. (*e*) All the signs change position in all the answer figures except figure (e), as shown in the diagram.



27. (*e*) One line is added to the pre-existing design on the boundary of the square.

28. (*d*) From section (i) to section (ii) of the original figures, the shaded portion and line present on one side of the main figure interchange positions and one pin appearing on the top of the figure is deleted.

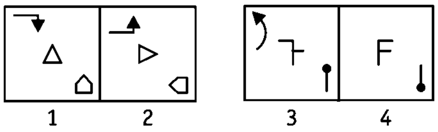
Type 5 Selecting the Correct Figure on the Basis of Analogous Figure

In this type of questions, two pairs of figures mentioned as problem figures, are followed by four figures mentioned as answer figures. Figure (2) of the first pair of problem figure is related with figure (1) of the same pair in some way. The same relationship is to be established between figures (3) and (4) of the second pair. If figure (4) is to be replaced by any one of the figures from the answer figures, then the figure which replaces figure (4) to establish the correct relationship is your answer.

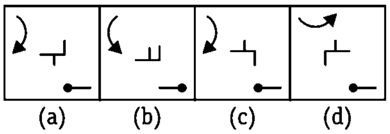
Examples given below will help to understand this type of questions in a better way

Directions (Example Nos. 28-32) In each of the following questions, two pairs of figures 1, 2 and 3, 4 are given as problem figures, followed by four answer figures as (a), (b), (c) and (d). Select the answer figure that will replace figure (4) of problem figures, so that relation is established between figure (3) and (4) similar to the relation that figure (1) holds with figure (2).

Ex **28** **Problem Figures**

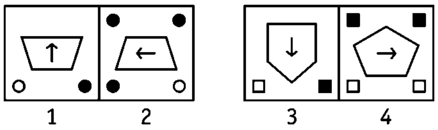


Answer Figures

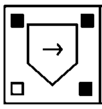


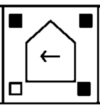
Sol. (*a*) From problem figure (1) to (2), the arrow at top left position rotates 180° and get reversed, the figure in the middle rotates 90° clockwise and the figure at the bottom right position rotates 90° anti-clockwise. On the basis of this rule problem figure (4) should be replaced by answer figure (a) to match it with problem figure (3).

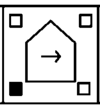
***Ex* 29 Problem Figures**

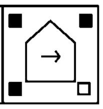


Answer Figures


(a)

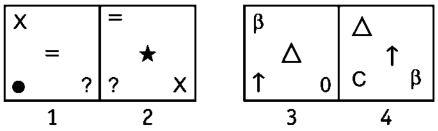

(b)


(c)

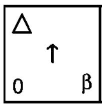

(d)

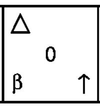
Sol. (*d*) The main figure get inverted, the arrow inside the figure rotates 90° anti-clockwise, the dot at the bottom positions interchange places and two black dots are added at the top position.

***Ex* 30 Problem Figures**



Answer Figures


(a)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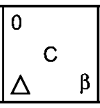
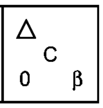
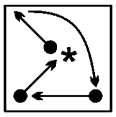
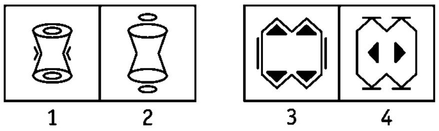

(c)


(d)

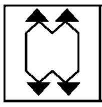
Sol. (*d*) From problem figure (1) to (2) all the symbols interchange positions as shown in the diagram and a new symbol appears in place of symbol marked by *.

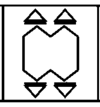


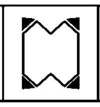
***Ex* 31 Problem Figures**

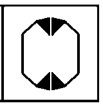


Answer Figures

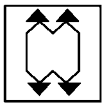

(a)


(b)

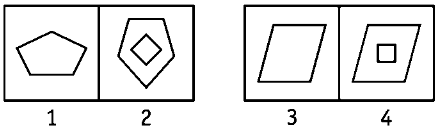

(c)


(d)

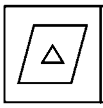
Sol. (*a*) From problem figure (1) to (2), line segments attached to both sides (left and right) of the figure are deleted and circles inside the figure come outside the figure.

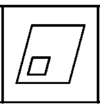


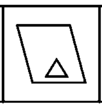
***Ex* 32 Problem Figures**

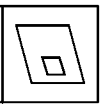


Answer Figures


(a)


(b)


(c)


(d)

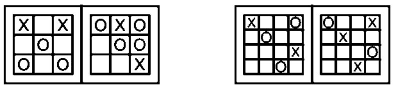
Sol. (c) From problem figure (1) to (2), the main figure rotates 180° and a new figure with one less number of sides than the pre-existing figure appears inside it. Figure (4) should be replaced by answer figure (c).

Practice Corner **2.5**

Build your Confidence...

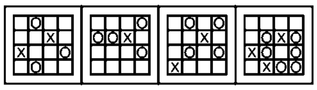
Directions (Q. Nos. 1-30) In each of the following questions, two pairs of problem figures marked 1, 2 and 3, 4 are given, followed by four answer figures. Select the best answer figure to substitute element 4 in the problem figures so that element 3 is related to element 4 in the same way as element 1 is related to the element 2. To establish the relationship, consider the maximum aspects of the figures (i.e., size, shape, movement, etc). The number of that answer figure which can be substituted for problem figure 4, is your answer. If it is not required to substitute any of the four answer figures, then mark your answer as (e).

1. Problem Figures



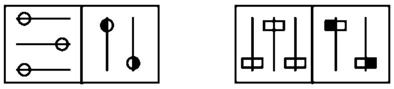
1 2 3 4

Answer Figures



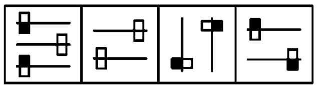
(a) (b) (c) (d)

2. Problem Figures



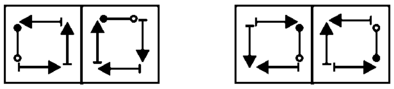
1 2 3 4

Answer Figures



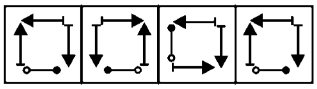
(a) (b) (c) (d)

3. Problem Figures



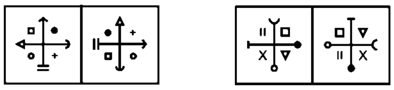
1 2 3 4

Answer Figures



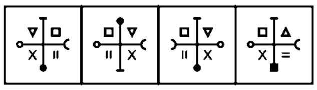
(a) (b) (c) (d)

4. Problem Figures



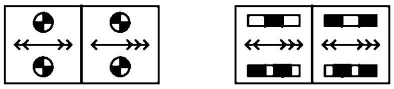
1 2 3 4

Answer Figures



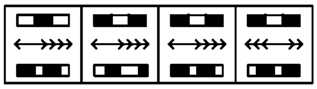
(a) (b) (c) (d)

5. Problem Figures



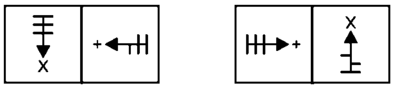
1 2 3 4

Answer Figures



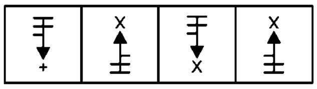
(a) (b) (c) (d)

6. Problem Figures



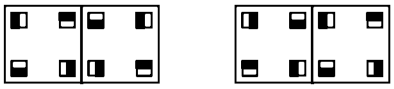
1 2 3 4

Answer Figures



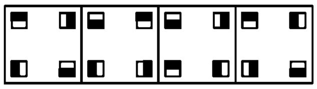
(a) (b) (c) (d)

7. Problem Figures



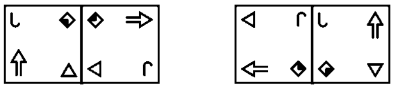
1 2 3 4

Answer Figures



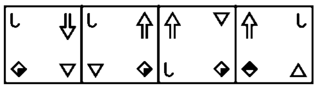
(a) (b) (c) (d)

8. Problem Figures



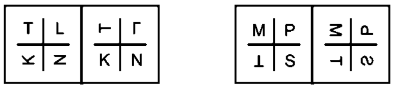
1 2 3 4

Answer Figures



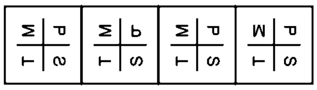
(a) (b) (c) (d)

9. Problem Figures



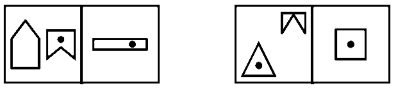
1 2 3 4

Answer Figures



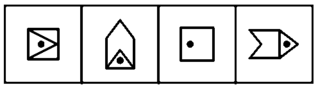
(a) (b) (c) (d)

10. Problem Figures



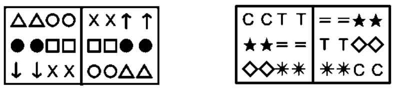
1 2 3 4

Answer Figures



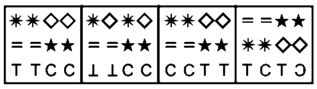
(a) (b) (c) (d)

11. Problem Figures



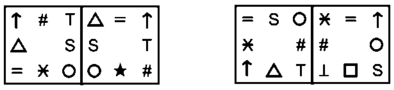
1 2 3 4

Answer Figures



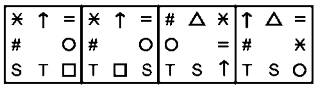
(a) (b) (c) (d)

12. Problem Figures



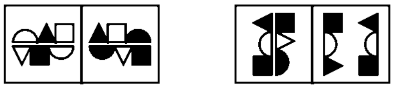
1 2 3 4

Answer Figures



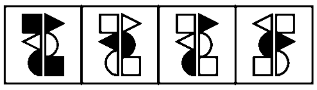
(a) (b) (c) (d)

13. Problem Figures



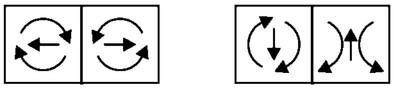
1 2 3 4

Answer Figures



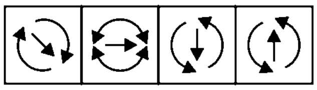
(a) (b) (c) (d)

14. Problem Figures



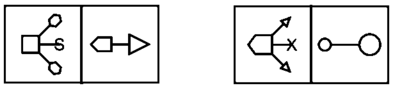
1 2 3 4

Answer Figures



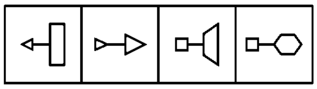
(a) (b) (c) (d)

15. Problem Figures



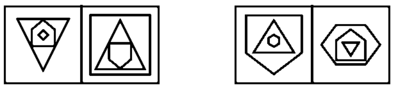
1 2 3 4

Answer Figures



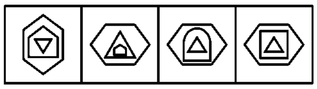
(a) (b) (c) (d)

16. Problem Figures



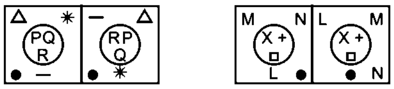
1 2 3 4

Answer Figures



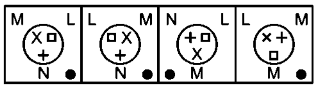
(a) (b) (c) (d)

17. Problem Figures



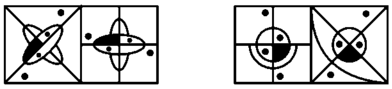
1 2 3 4

Answer Figures



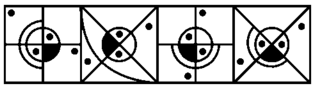
(a) (b) (c) (d)

18. Problem Figures



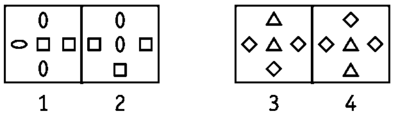
1 2 3 4

Answer Figures

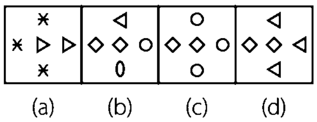


(a) (b) (c) (d)

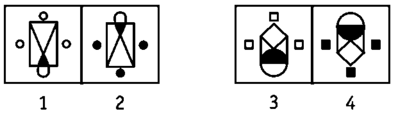
19. Problem Figures



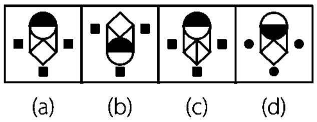
Answer Figures



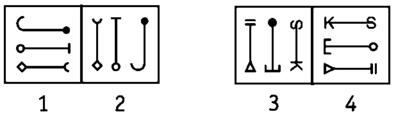
20. Problem Figures



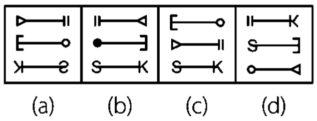
Answer Figures



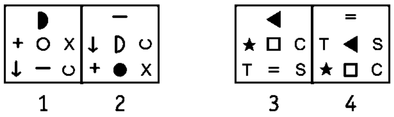
21. Problem Figures



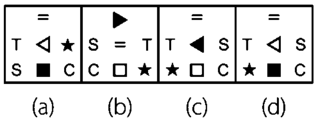
Answer Figures



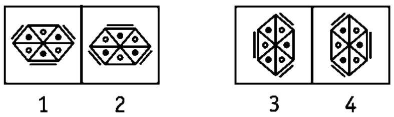
22. Problem Figures



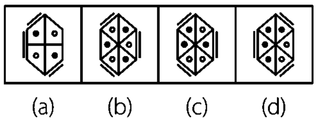
Answer Figures



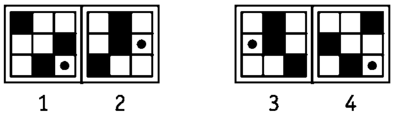
23. Problem Figures



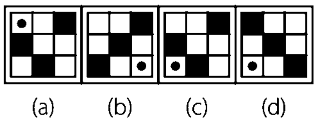
Answer Figures



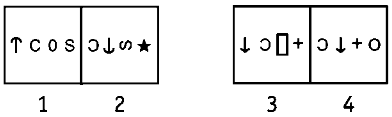
24. Problem Figures



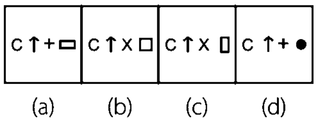
Answer Figures



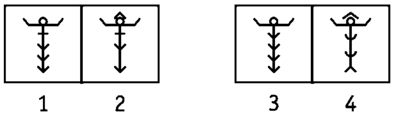
25. Problem Figures



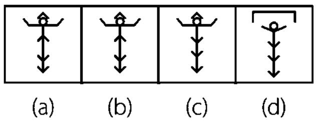
Answer Figures



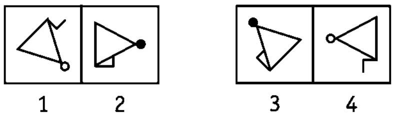
26. Problem Figures



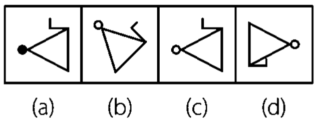
Answer Figures



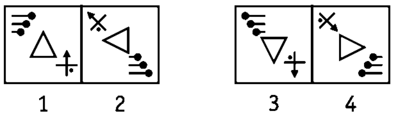
27. Problem Figures



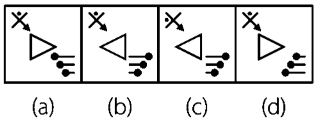
Answer Figures



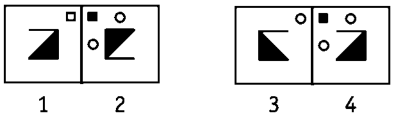
28. Problem Figures



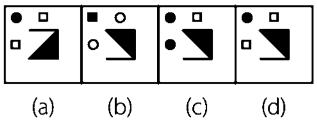
Answer Figures



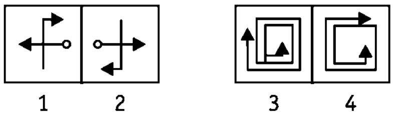
29. Problem Figures



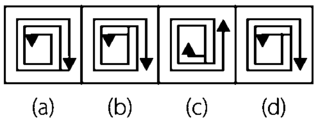
Answer Figures



30. Problem Figures



Answer Figures



Response & Interpretations **(2.5)**

1. (*c*) From problem figure (1) to (2), the number of blank circles is increased by one and the number of (X) remains unchanged.

2. (*d*) From problem figure (1) to (2), the upper figure is deleted and the other two figures rotate through 90° clockwise in such a way that the outer portion of the circles get shaded.

3. (*b*) The arrangement of arrows rotate through 90° clockwise in such a way that each arrow gets inverted at the new position.

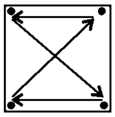
4. (*e*) The main figure rotates through 90° clockwise while the symbols move one block anti-clockwise. Problem figure (4) is obtained from problem figure (3) in the same way, hence no change is required.

5. (*b*) From problem figure (1) to (2), in both the identical figures, black portions become white and white portions become black, one arrow from left hand side shifts to the right side and gets reversed.

6. (*c*) The arrow rotates through 90° clockwise in such a way that one line segment from the arrow is removed and other sign rotates through 45°.

7. (*a*) All squares rotate through 90° anti-clockwise.

8. (*e*) All the symbols change position as shown in the diagram in such a way that the upper two symbols get inverted, symbol ⇑ rotates through 90° clockwise, triangle rotates through 90° anti-clockwise.

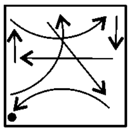


9. (*b*) The symbols at the upper left and lower right position rotate through 90° anti-clockwise and symbol at lower left position rotates through 90° clockwise and the symbol at upper right position gets inverted.

10. (*c*) Both the figures join together and the resultant figure rotates through 90° clockwise.

11. (*a*) The symbols of first and third row interchange places and then the positions of the elements of all the three rows get reversed.

12. (*b*) From section (1) to (2), all the symbols change positions as shown in the diagram and the symbol in place of * is replaced by a new symbol.



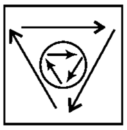
13. (*b*) Figures in the upper and lower rows interchange their positions in such a way that the white figures becomes black and the black figures becomes white.

14. (*d*) All the arrows from section (1) to (2), change directions.

15. (*d*) The square is converted into pentagon and hexagon is converted into triangle and *vice-versa*. These changes take place in such a way that both the figures, after conversion, appear in a straight line.

16. (*e*) The innermost figure rotates through 90° and becomes the outermost figure, the outermost figure gets inverted and becomes the middle figure and the middle figure gets inverted and becomes the innermost figure.

17. (*b*) All the symbols change position from (1) to (2) as shown in the diagram and the remaining symbols remains as such.



18. (*d*) The main figure rotates through 45° clockwise in such a way that two dots outside the figure shift one step clockwise.

19. (*d*) The arrangement of symbols rotates through 90° anti-clockwise in such a way that both types of symbols interchange their designs and positions as well.

20. (*e*) The main figure gets inverted in such a way that the three similar designs outside the figure gets shaded.

21. (*b*) All the symbols rotate through 90° anti-clockwise.

22. (*d*) From section (1) to section (2) of the problem figure, both the symbols on left side and right side interchange positions, the symbols on the central column shift one step downwards and the lower most symbol replaces upper most symbol and their shadings gets changed *i.e.*, white become black and *vice-versa*.

23. (*b*) The dot inside the figure and lines outside the figure move one step clockwise.

24. (*a*) From section (1) to section (2) of the problem figure, the shaded block moves in upper row one step right side, shaded blocks in the middle and lower rows move one step left side and dot inside the figure moves one step upwards.

25. (*d*) Both the symbols on left side interchange positions in such a way that the first symbol, from left, gets inverted and the second symbol gets reversed at their new positions, respectively.

Both the symbols on the right side interchange positions in such a way that first symbol, from right side rotates through 90° anti-clockwise and second symbol is replaced by a new symbol at the new position.

26. (c) From section (1) to section (2), the figure remains the same except one of the arrows which comes from below in inverted form on the top of figure.

27. (*c*) From problem figure (1) to (2), the main figure rotates through 45° anti-clockwise in such a way that the line segment attached to one side of the figure shifts to other side and gets reversed, the shading of the dot on top of the figure gets changed.

28. (*d*) From problem figure (1) to (2), the triangle rotates through 90° anti-clockwise, three pins and crossed arrow interchange positions in such a way that the three pins change their order and the crossed arrow rotates through 45° anti-clockwise and the dot (·) also moves one side in clockwise direction.

29. (*d*) From problem figure (1) to (2), the main figure rotates through 180°, the blank square on the top of the figure shifts one side in anticlockwise direction and gets shaded and two blank circles are added outside the figure.

30. (*b*) From problem figure (1) to (2), the main figure rotates through 180°.

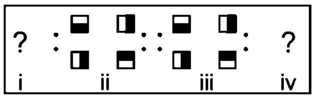
Type 6 Selecting the Correct Set of Figures to Establish Analogy

This is the last category of questions on Analogy. In this type of questions, the problem figures constitute two figures with two other figures missing, one from each pair. Each missing figure is represented by the sign'?'. The problem figures are followed by five pairs of answer figures marked (a), (b), (c), (d) and (e). Students are required to select one pair from the answer pairs that will replace the '?' sign and establishes a similar relation between figure (i) and (ii) and figure (iii) and (iv).

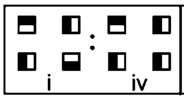
Examples given below will give a better idea about such type of questions

Directions (Example Nos. 33-37) In the following questions, find the best substitute from the answer figures which replaces the sign of question marks such that figure (iii) is related to figure (iv) in same way as figure (i) relates to figure (ii).

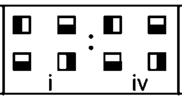
***Ex* 33 Problem Figures**



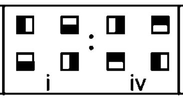
Answer Figures



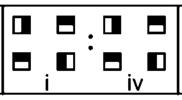
(a)



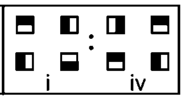
(b)



(c)



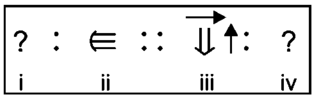
(d)



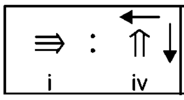
(e)

Sol. (c) From section (i) to section (ii) of the problem figure, all the squares rotate 90° anti-clockwise and the same process repeats from section (iii) to section (iv).

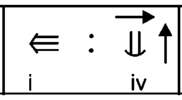
***Ex* 34 Problem Figures**



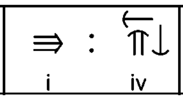
Answer Figures



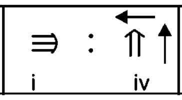
(a)



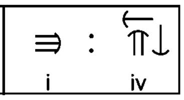
(b)



(c)



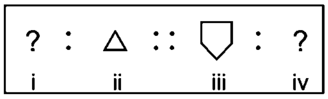
(d)



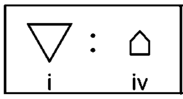
(e)

Sol. (c) From section (i) to section (ii) of the problem figure, the main figure gets inverted in such a way design on the head of the figure is changed into new design. The same process is repeated from section (iii) to section (iv) of the problem figure.

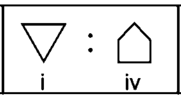
Ex **35 Problem Figures**



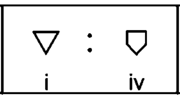
Answer Figures



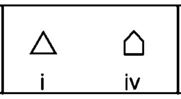
(a)



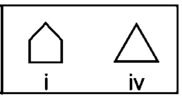
(b)



(c)



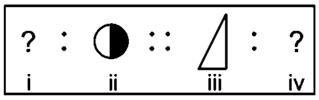
(d)



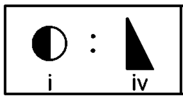
(e)

Sol. (*a*) From section (i) to section (ii) of the problem figure, the figure gets inverted and becomes small in size.

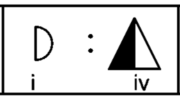
Ex **36 Problem Figures**



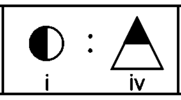
Answer Figures



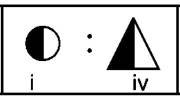
(a)



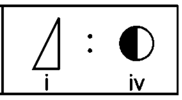
(b)



(c)



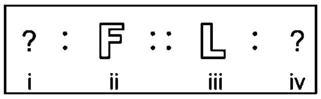
(d)



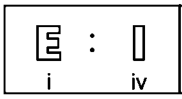
(e)

Sol. (*b*) From section (i) to section (ii) of the problem figure, an identical figure appears on the other side of the figure and existing figure gets shaded. Hence, figure (b) is the correct alternate to replace section (i) and (iv) of the problem figure.

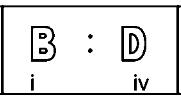
Ex **37 Problem Figures**


? : F :: L : ?
i ii iii iv

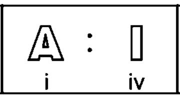
Answer Figures



(a)



(b)



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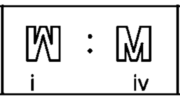

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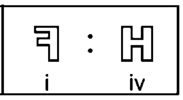


(e)

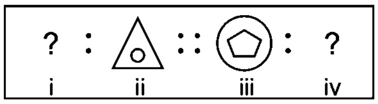
Sol. (*a*) From section (i) to section (ii) of the problem figure, one segment (lower) of the existing figure is removed.

Practice Corner **2.6**

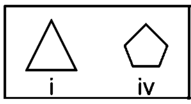
Build your Confidence...

Directions (Q. Nos. 1-18) In each of the following questions, there are four figures (i), (ii), (iii) and (iv) which constitute the problem set and answer figures marked (a), (b), (c), (d) and (e) each consisting of two figures marked (i) and (iv) which constitute the answer set. Select a figure from the answer sets the contents of which best substitute (?) in the problem sets such that figure (iii) is related to figure (iv) in same way as figure (i) is related to figure (ii).

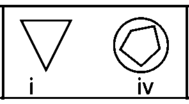
1. Original Pair



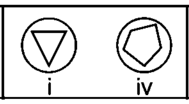
Answer Pairs



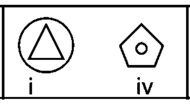
(a)



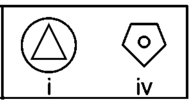
(b)



(c)

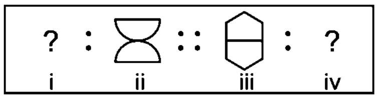


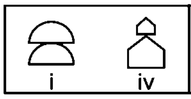
(d)



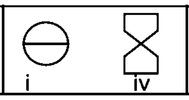
(e)

2.





(a)



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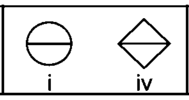

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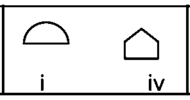

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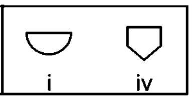
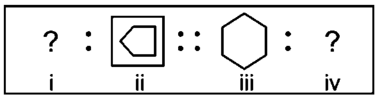
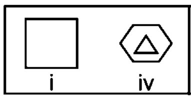


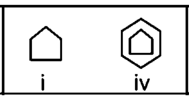
(e)

3.





(a)



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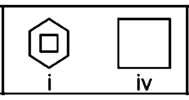

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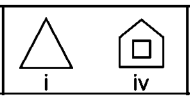

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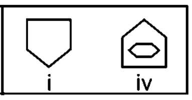

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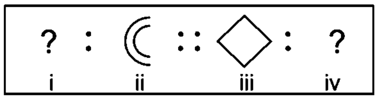
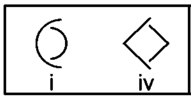
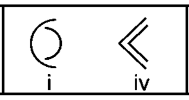




(a)



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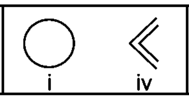

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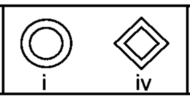

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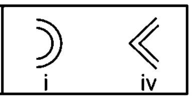
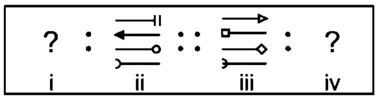
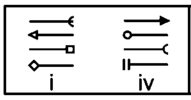


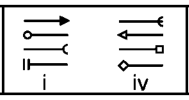
(e)

5. Original Pair **Answer Pairs**





(a)



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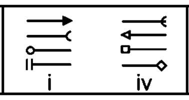

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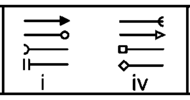

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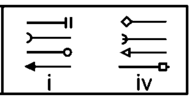

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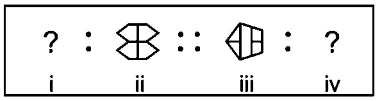
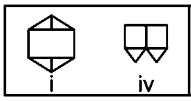
6.





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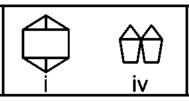

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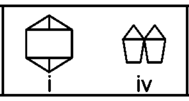

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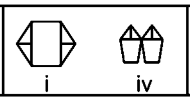

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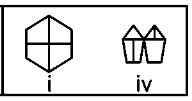

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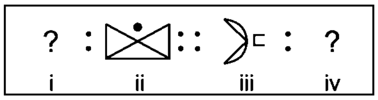

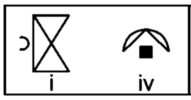

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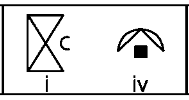

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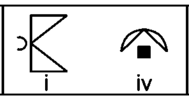

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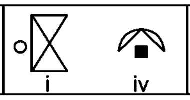

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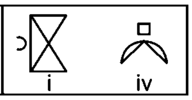

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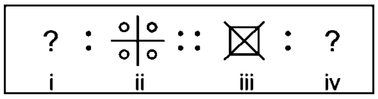
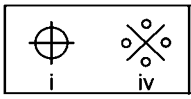
8.





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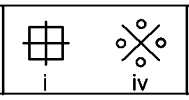

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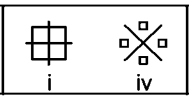

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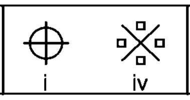

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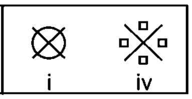

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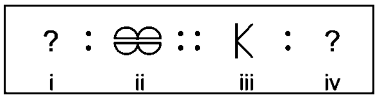

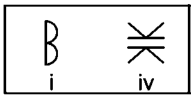

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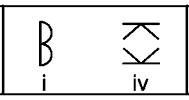

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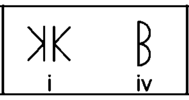

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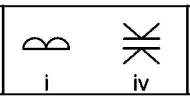

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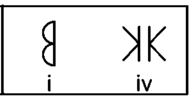

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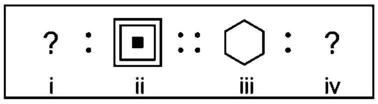
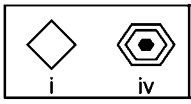
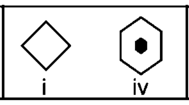
10.





(a)



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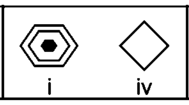
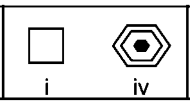


(c)



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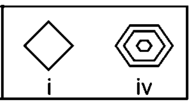

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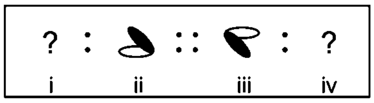

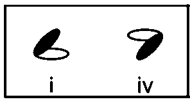

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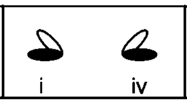

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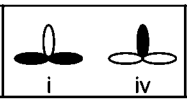

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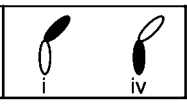

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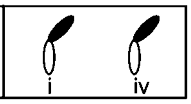

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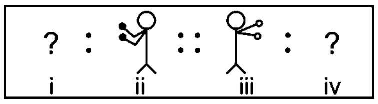

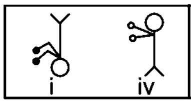

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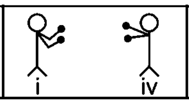

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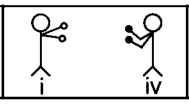

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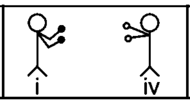

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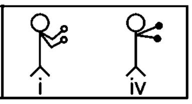

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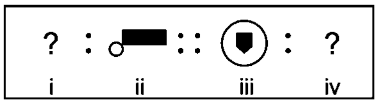

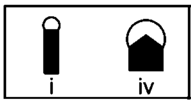

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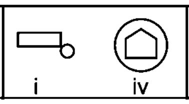

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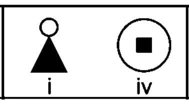

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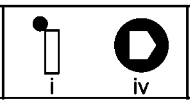

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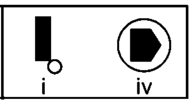

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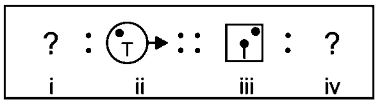

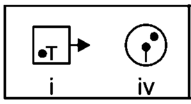

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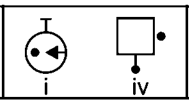

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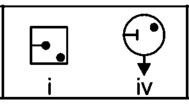

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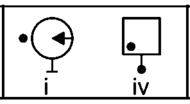

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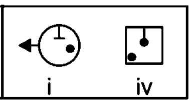

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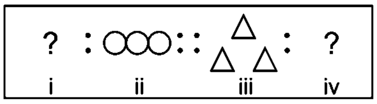
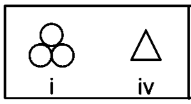
15. Original Pair **Answer Pairs**





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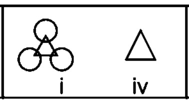

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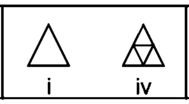

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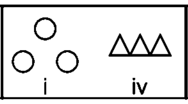

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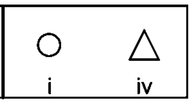

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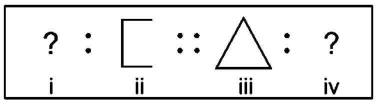

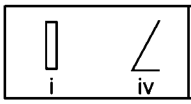

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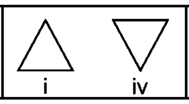

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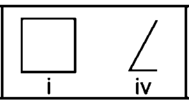

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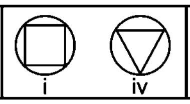

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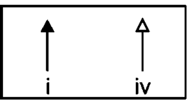

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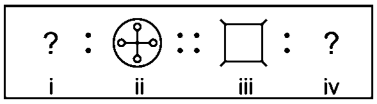

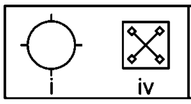

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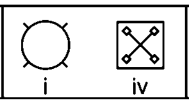

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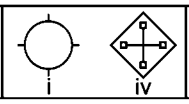

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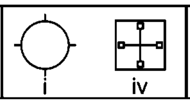

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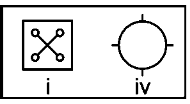

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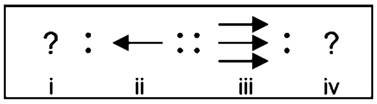

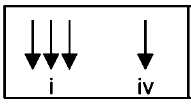

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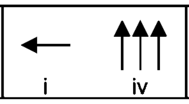

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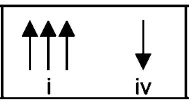

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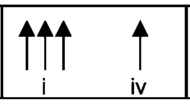

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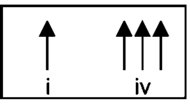


(e)

Response & Interpretations **(2.6)**

1. (*d*) Both the figures interchange positions.

2. (*b*) The upper and lower halves of the figure get inverted at their positions.

3. (*e*) The figure rotates through 90° clockwise and a new figure with number of sides one less than that of the original figure comes outside it.

4. (*c*) The figure is divided into two halves through a vertical line and the right half comes inside the left half of the figure.

5. (*b*) The lowermost figure shifts to the uppermost position and all other figures shift one step downwards in such a way that every figure is laterally reversed at the new position.

6. (*b*) The figure rotates through 90° clockwise in such a way that two parallel lines inside the figure join together and vertical line is removed and the resultant figure appears in pairs.

7. (*a*) The figure rotates through 90° anti-clockwise in such a way that semi-circle is converted into a full circle, gets shaded and shifts to the opposite side of the figure.

8. (*d*) From section (i) to (ii) of the problem figure, one fourth portion of the circle appearing in each quadrant of both axes is converted into a full circle. The same process will be repeated from section (iii) to (iv) of the problem figures.

9. (*a*) The figure rotates through 90° clockwise in such a way that an identical figure appears on upper side of the original figure.

10. (*d*) The figure rotates through 90° clockwise and two similar concentric figures appear inside it in such a way that the innermost figure gets shaded.

11. (*e*) Black leaf and white leaf rotate through 90° each, anti-clockwise and clockwise, respectively.

12. (*d*) From section (i) to section (ii) the figure gets laterally inverted. The same pattern follows from section (iii) to section (iv)

13. (*d*) The figure rotates through 90° anti-clockwise in such a way that the black portion becomes white and the white portion becomes black.

14. (*e*) The design inside the figure gets inverted and shifts to the opposite side, dot inside the figure shifts to the opposite side and arrow outside the figure shifts to the other side.

15. (*d*) From section (i) to section (ii), all the three figures get arranged in a straight line.

16. (*c*) From section (i) to (ii) of the problem figures, the right half of the figure is removed.

17. (*a*) From section (i) to (ii) of the problem figures, all the lines outside the main figure shift inside and join together and four small figures identical to the main figure are attached to the ends of the lines.

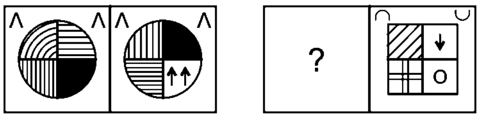
18. (*d*) Two arrows, out of three arrows, are removed and the remaining arrow rotates through 90° anti-clockwise.

Master Exercise

Take a Leap...

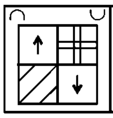
Directions (Q. Nos. 1-6) In the following questions, the second figure in the first unit of the problem figures bears a certain relationship to the first figure. Similarly one of the figures in the answer figures bears the same relationship to either the first or the second figure in the second unit of the problem figures. You are therefore required to locate the figure which would fit in the place of the question mark (?).

1. Problem Figures



[MHA-CET 2011]

Answer Figures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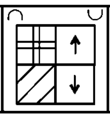
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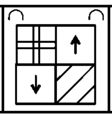
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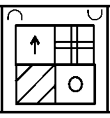
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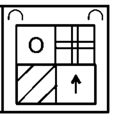
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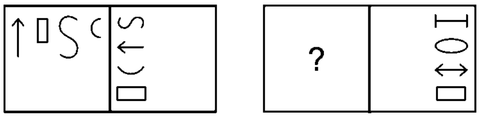
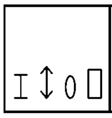
2. Problem Figures



[IBPS (PO) 2011]

Answer Figures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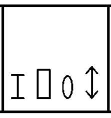
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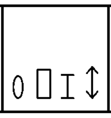
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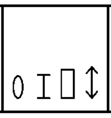
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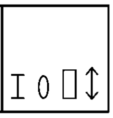
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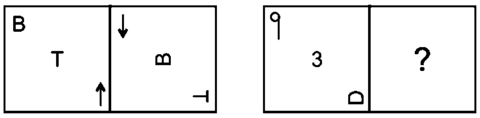
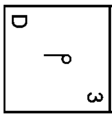


[MHA-CET 2011]

Answer Figures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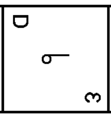
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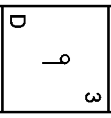
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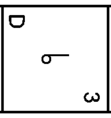
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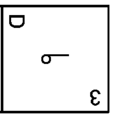
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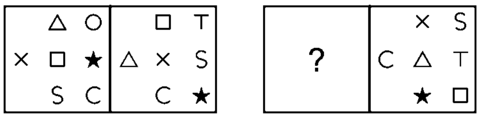
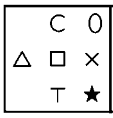
4. Problem Figures



[IBPS (PO) 2011]

Answer Figures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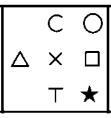
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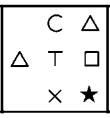
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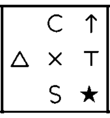
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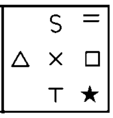
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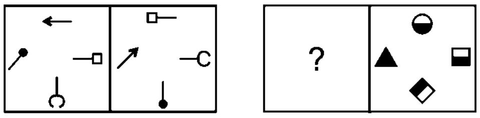
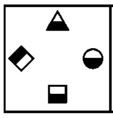
5. Problem Figures



[MHA- CET 2011]

Answer Figures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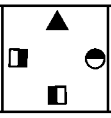
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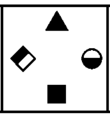
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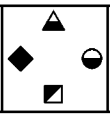
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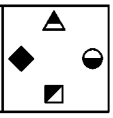
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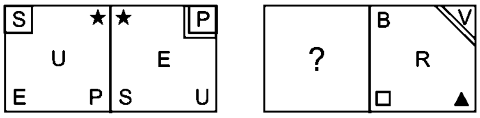
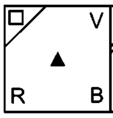
6. Problem Figures



[MHA-CET 2011]

Answer Figures



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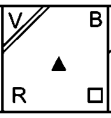

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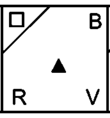

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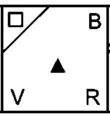

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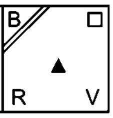
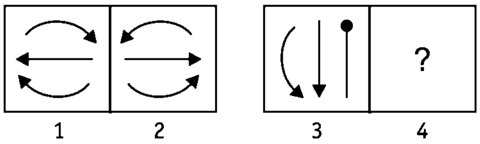


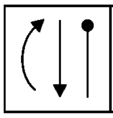
(e)

Directions (Q. Nos. 7-24) In each of the following question, the second figure in the first part of the problem figures bears a certain relationship to the first figure. Similarly, one of the figure in answer figures which would replace the sign of question mark to establish same relationship will be your answer.

7. Problem Figures



Answer Figures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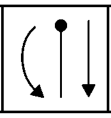
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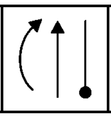
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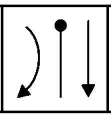
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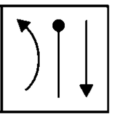
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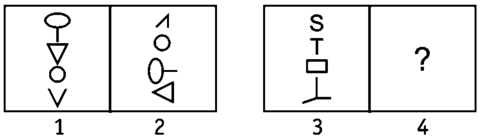
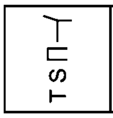
8. Problem Figures



Answer Figures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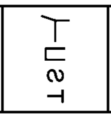
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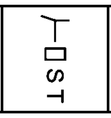
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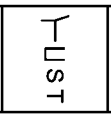
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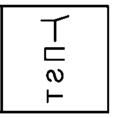
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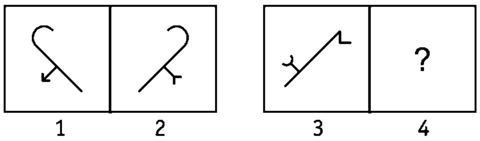
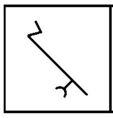
9. Problem Figures



Answer Figures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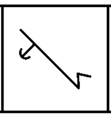
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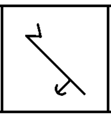
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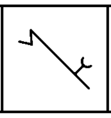
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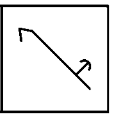
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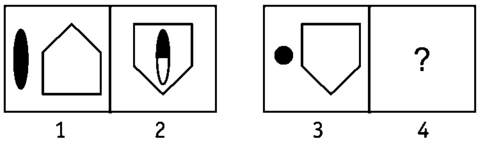
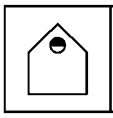
10. Problem Figures



Answer Figures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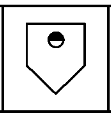
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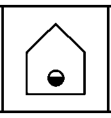
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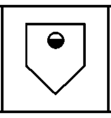
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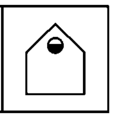
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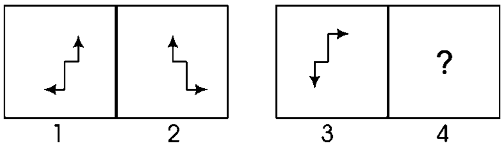
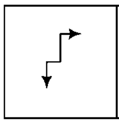
11. Problem Figures



[SSC (Steno) 2011]

Answer Figures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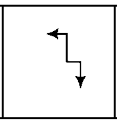
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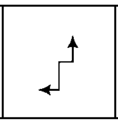
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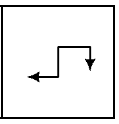
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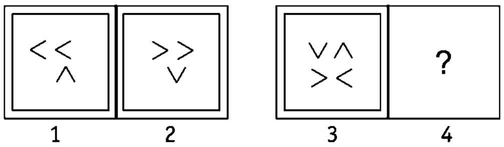
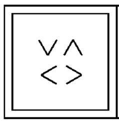
12. Problem Figures



[SSC (Steno) 2011]

Answer Figures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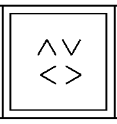
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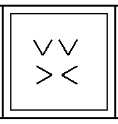
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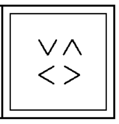
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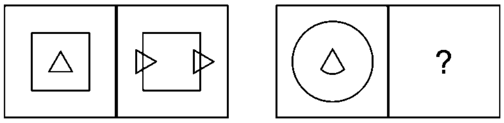
13. Problem Figures



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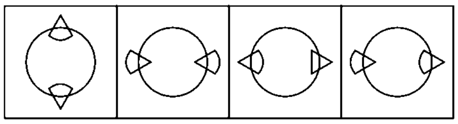
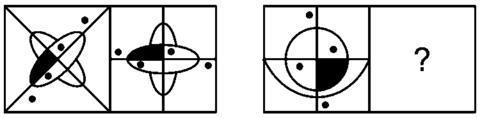
Answer Figures



(a) (b) (c) (d)

14. Problem Figures



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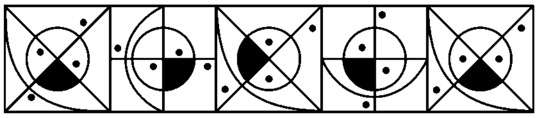
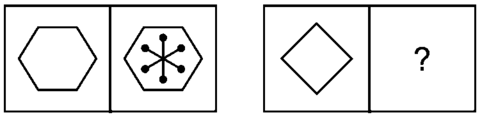
Answer Figures



(a) (b) (c) (d) (e)

15. Problem Figures



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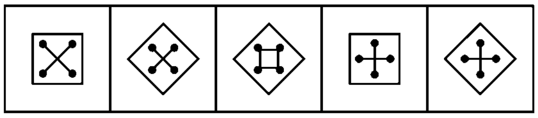
Answer Figures



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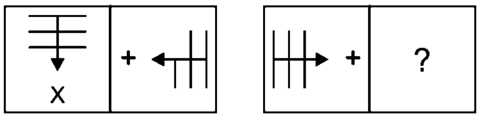
16. Problem Figures



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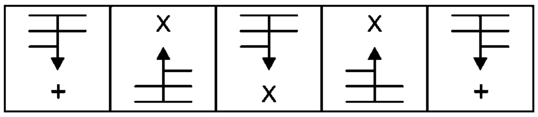
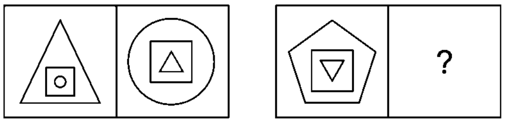
Answer Figures



(a) (b) (c) (d) (e)

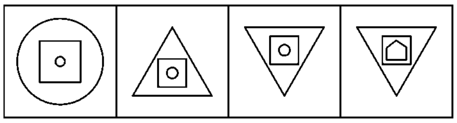
17. Problem Figures



1 2 3 4

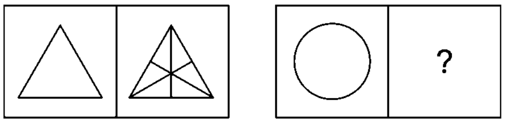
[SSC (Steno) 2011]

Answer Figures



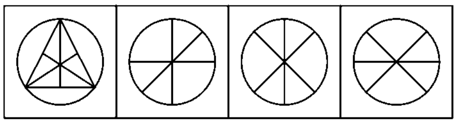
(a) (b) (c) (d)

18. Problem Figures



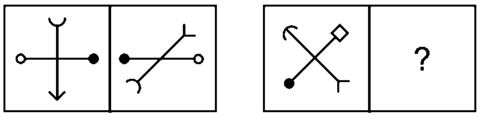
1 2 3 4

Answer Figures



(a) (b) (c) (d)

19. Problem Figures



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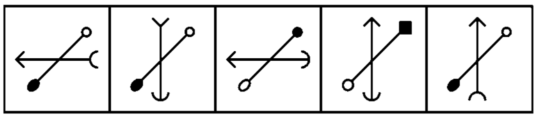
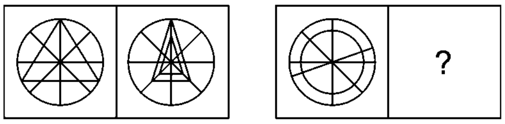
Answer Figures



(a) (b) (c) (d) (e)

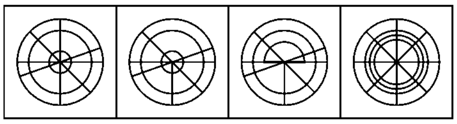
20. Problem Figures



1 2 3 4

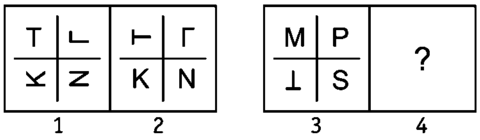
[SSC (CGL) 2008]

Answer Figures



(a) (b) (c) (d)

21. Problem Figures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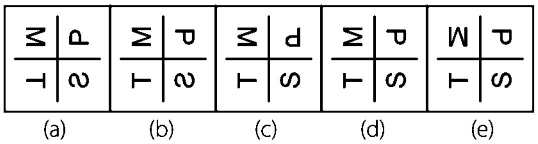
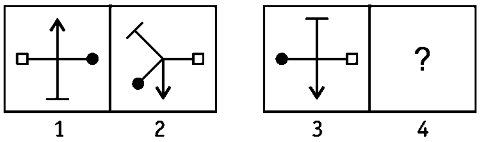
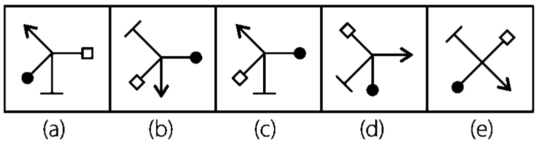
Answer Figures



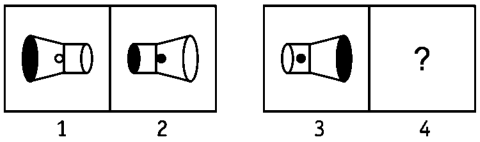
22. Problem Figures



Answer Figures



23. Problem Figures



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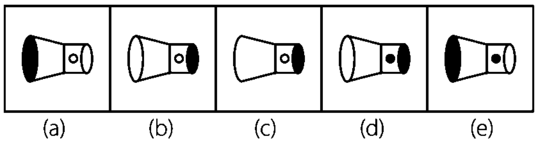
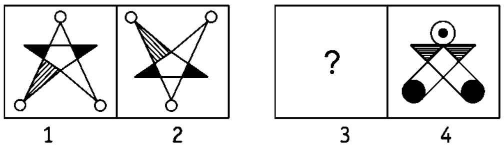


24. Problem Figures



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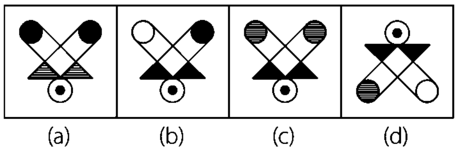
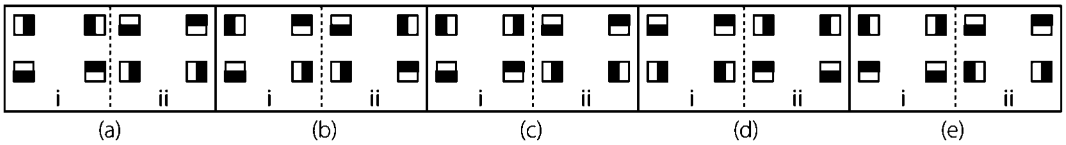


Directions (Q. Nos. 25-40) In the following questions, element (ii) is related to element (i) in a particular way in four pairs of figures out of the given five figure. Find the pair of figures in which the element (ii) is not related to element (i).

25.



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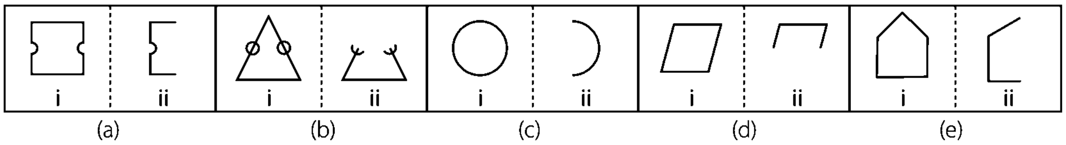

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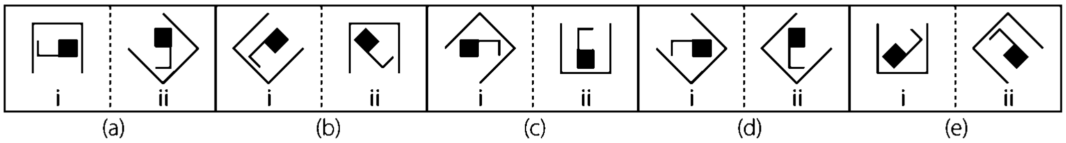

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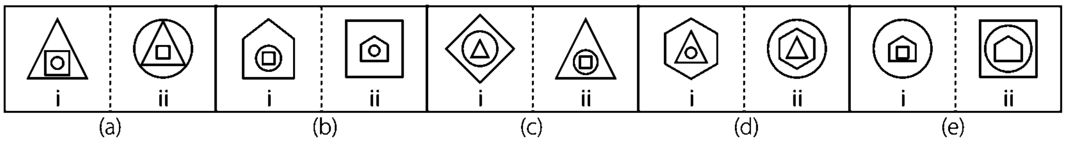

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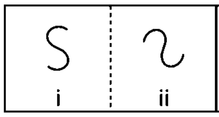

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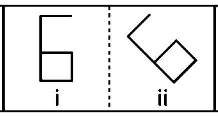

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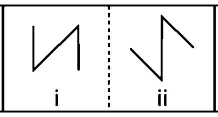

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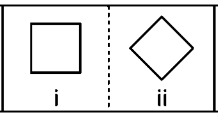

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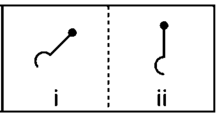

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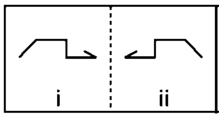

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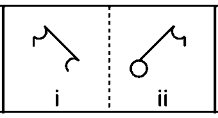

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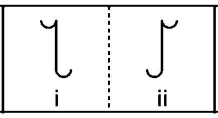

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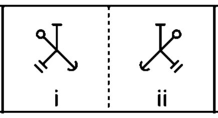

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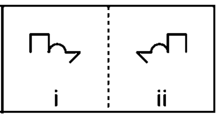

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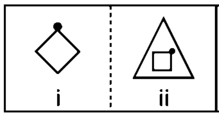

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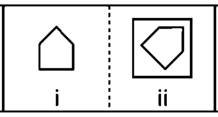

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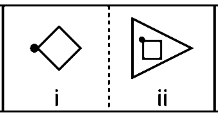

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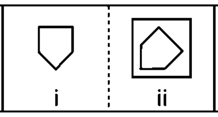

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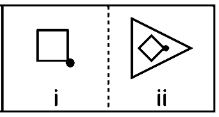

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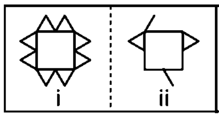

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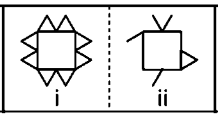

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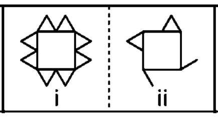

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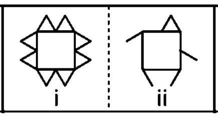

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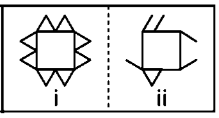

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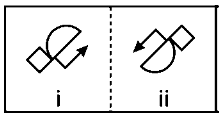

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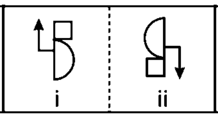

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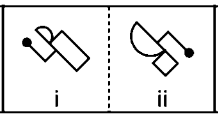

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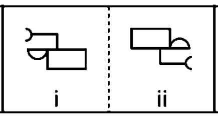

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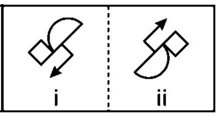

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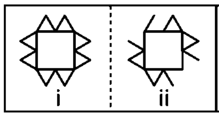

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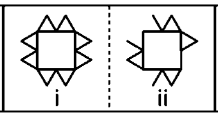

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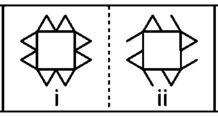

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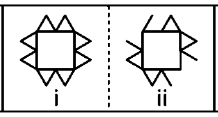

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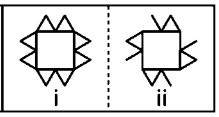

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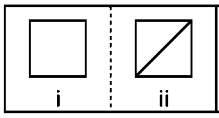

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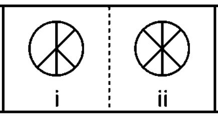

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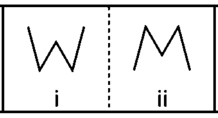

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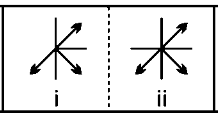

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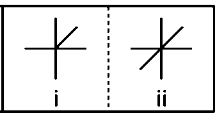

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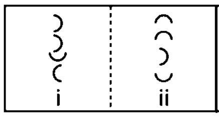

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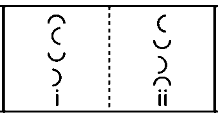

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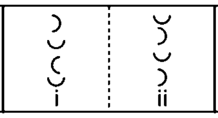

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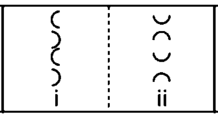

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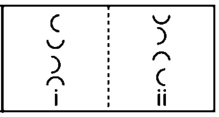

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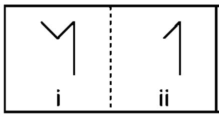

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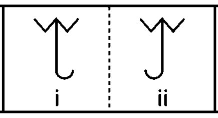

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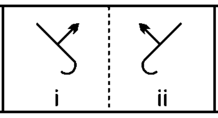

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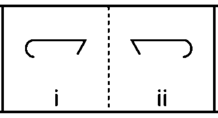

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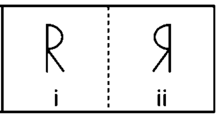

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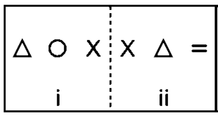
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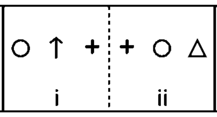
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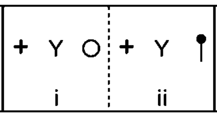
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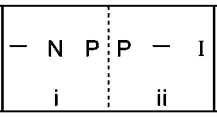
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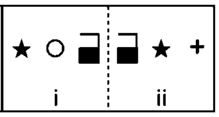
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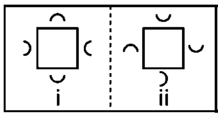
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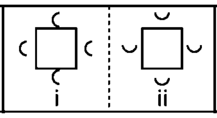
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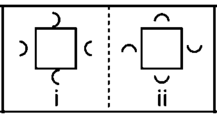
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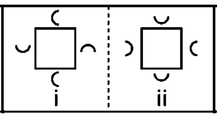
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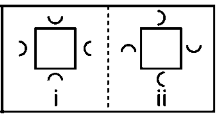
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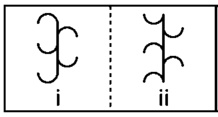
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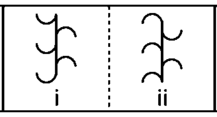
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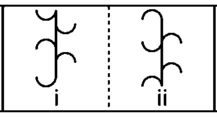
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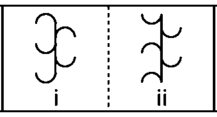
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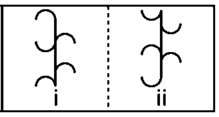
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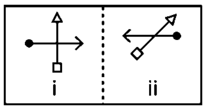
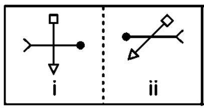
Directions (Q. Nos. 41-51) In each of the following questions, a related pair of figures (problem figure) is followed by five numbered pairs of figures. Out of these, five, four have relationship similar to that in the problem figure. Only one pair of figures does not have similar relationship. Select that pair of figures which does not have a similar relationship to that in the problem figure. Number of that pair is your answer.

41. Problem Figures **Answer Figures**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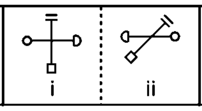
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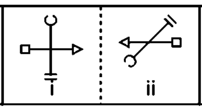
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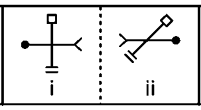
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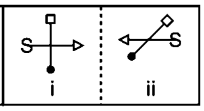
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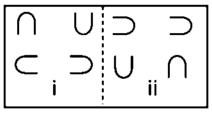
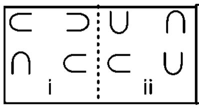
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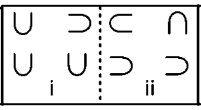
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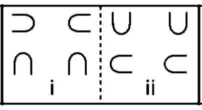
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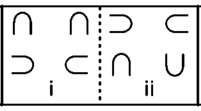
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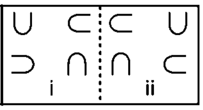
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[Syndicate Bank (PO)2009]

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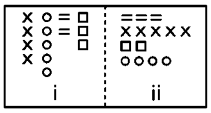
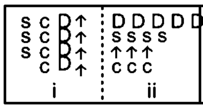
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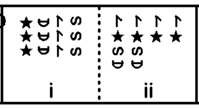
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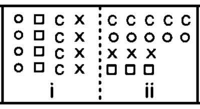
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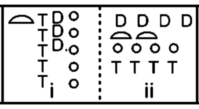
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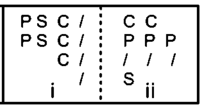
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[UCO Bank (PO)2009]

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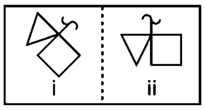
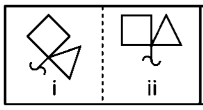
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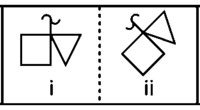
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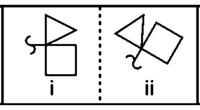
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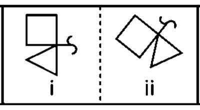
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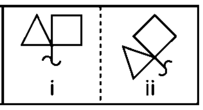
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[Punjab & Sindh Bank (PO) 2009]

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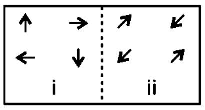
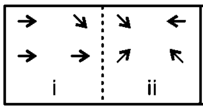
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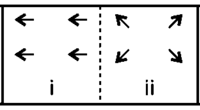
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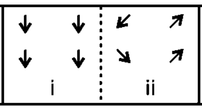
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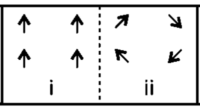
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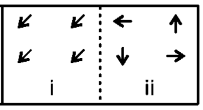
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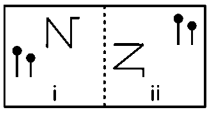
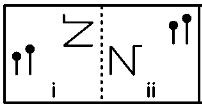
[BOB (PO)2009]

46. Problem Figures **Answer Figures**





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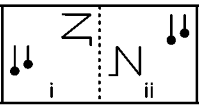

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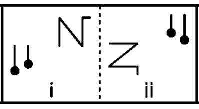

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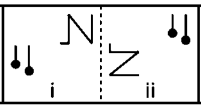

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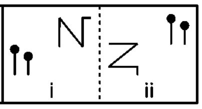

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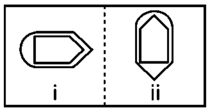

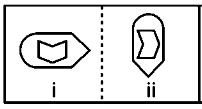

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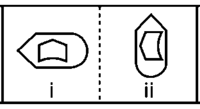

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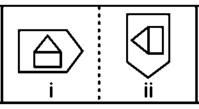

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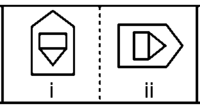

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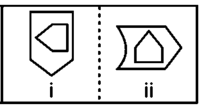

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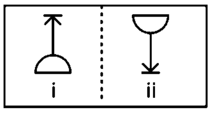

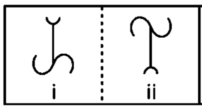

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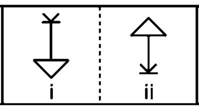

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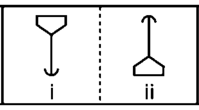

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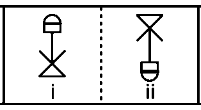

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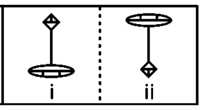

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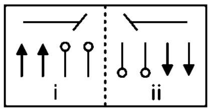

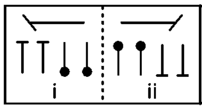

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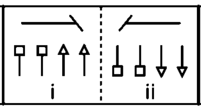

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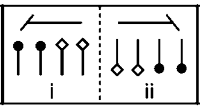

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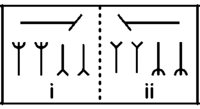

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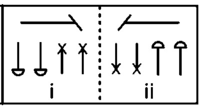

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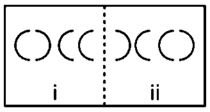

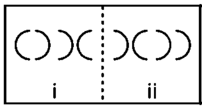

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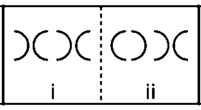

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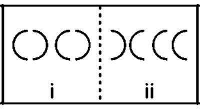

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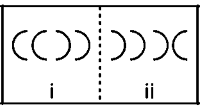

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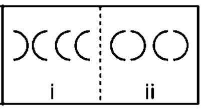

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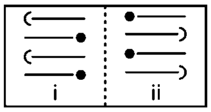

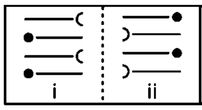

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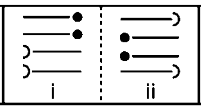

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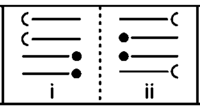

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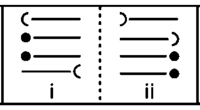

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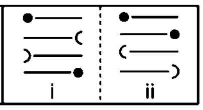
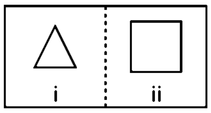
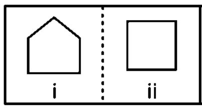


(e)

Directions (Q. Nos. 52-56) In each of the following questions, a problem figures is followed by five numbered pairs of figures. Select the pair that has a relationship similar to that in the problem figure. The best possible answer is to be selected from a group of fairly close choices.

52. Problem Figures **Answer Figures**





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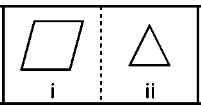

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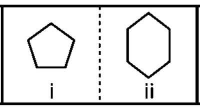

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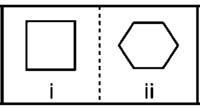

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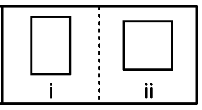

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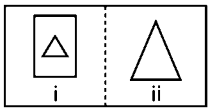

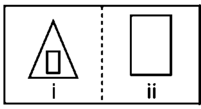

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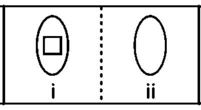

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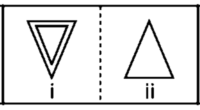

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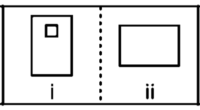

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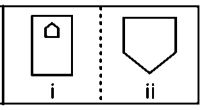
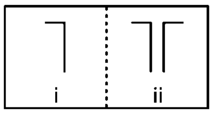
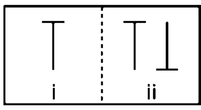


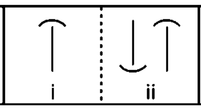
(e)

54.





(a)



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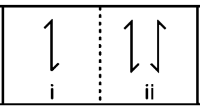
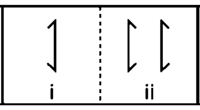


(c)



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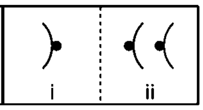
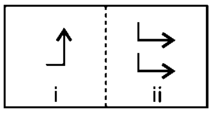
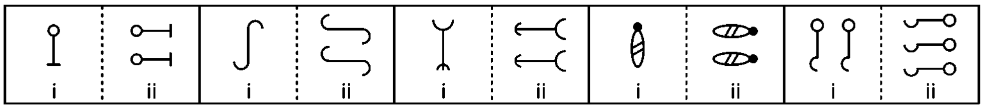


(e)

55. Problem Figures

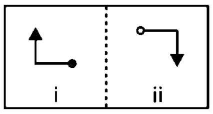


Answer Figures

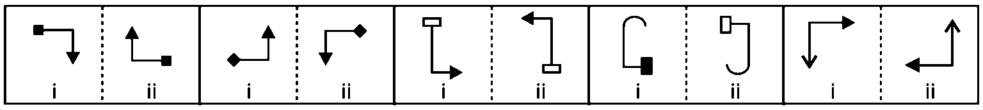


(a) (b) (c) (d) (e)

56. Problem Figures



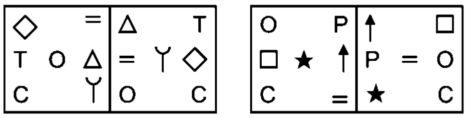
Answer Figures



(a) (b) (c) (d) (e)

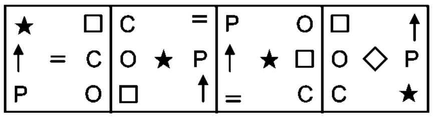
Directions (Q. Nos. 57-61) In each of the following questions, two pairs of problem figures marked 1,2 and 3, 4 followed by four answer figures. Select the best answer figurer to substitute element 4 in the problem figures, so that element 3 is related to element 4 in the same way as element 1 is related to the element 2. To establish the relationship, consider the maximum aspects of the figures (i.e., size, shape, movement, etc. The number of that answer figure which can be substituted for problem figure 4, is your answer. If it is not required to substitute any of the four answer figures, then mark your answer as (e).

57. Problem Figures



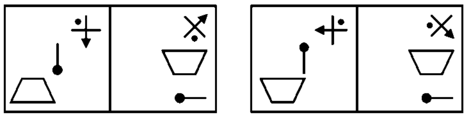
1 2 3 4

Answer Figures



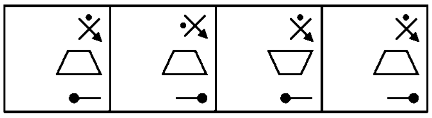
(a) (b) (c) (d)

58. Problem Figures



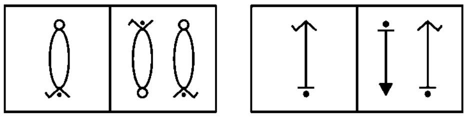
1 2 3 4

Answer Figures



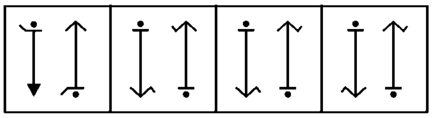
(a) (b) (c) (d)

59. Problem Figures



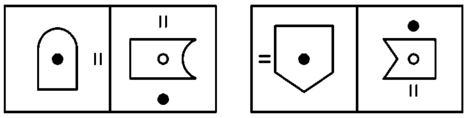
1 2 3 4

Answer Figures



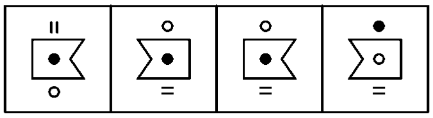
(a) (b) (c) (d)

60. Problem Figures



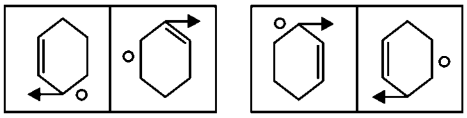
1 2 3 4

Answer Figures



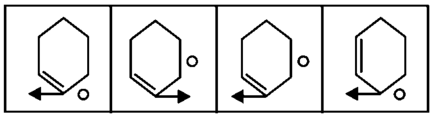
(a) (b) (c) (d)

61. Problem Figures



1 2 3 4

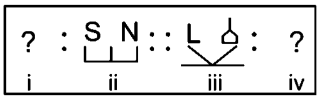
Answer Figures

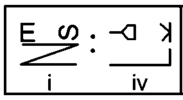


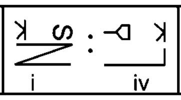
(a) (b) (c) (d)

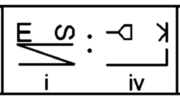
Directions (Q. Nos. 62-65) In the following questions, find the best substitute from the answer figure which replaces the sign of question marks such that figure (iii) is related to figure (iv) in the same ways as figure (i) is related to figure (ii).

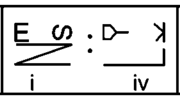
62. Problem Figure **Answer Figures**

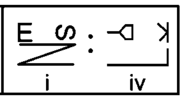



(a)

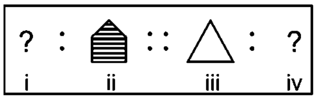

(b)

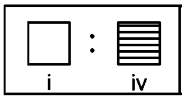

(c)

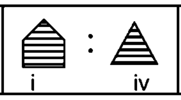

(d)


(e)

63.




(a)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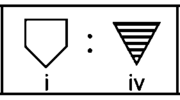
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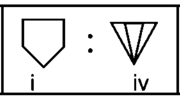
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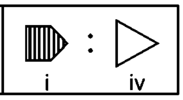
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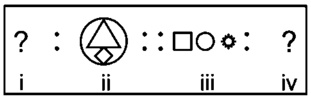
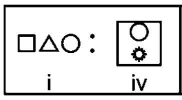
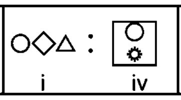
64.




(a)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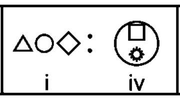
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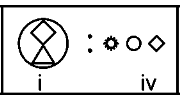
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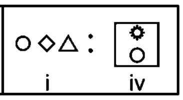
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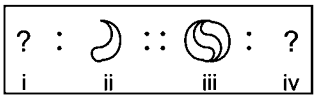
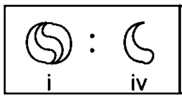
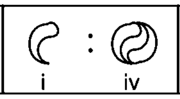
65.




(a)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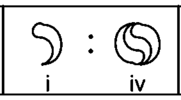
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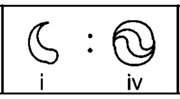
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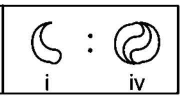
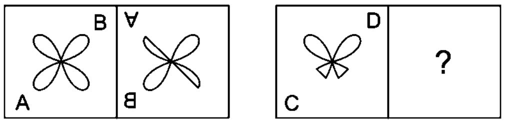

(e)

Directions (Q. Nos. 66-87) The second figure in the first part of the problem figures bears a certain relationship to the first figure. Similarly, one of the figures in answer figures bears the same relationship to the first figure in the second part. You have to select the figure from the set of answer figures which would replace the sign of question mark (?).

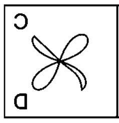
66. Problem Figures

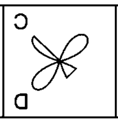


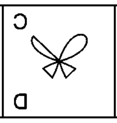
1 2 3 4

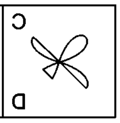
[SSC (CGL) 2008]

Answer Figures


(a)


(b)


(c)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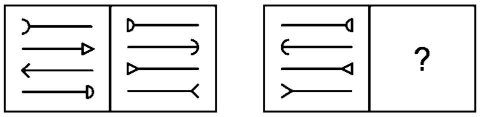
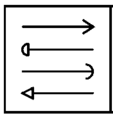
67. Problem Figures



1 2 3 4

Answer Figures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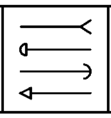
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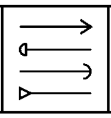
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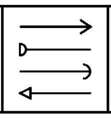
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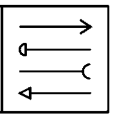
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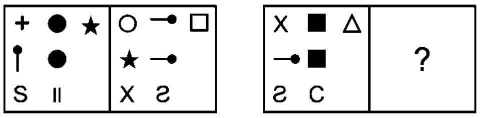
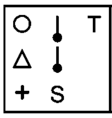
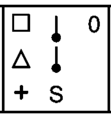
68. Problem Figures



1 2 3 4

Answer Figures


(a)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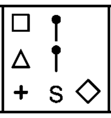
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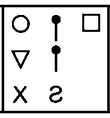
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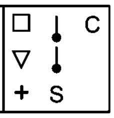
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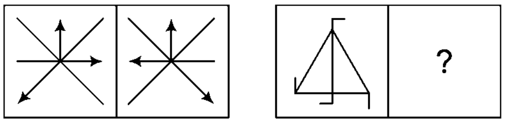
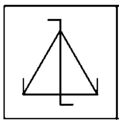
69. Problem Figures

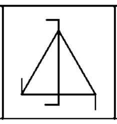


1 2 3 4

[SSC (CPO) 2011]

Answer Figures


(a)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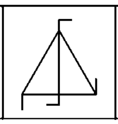
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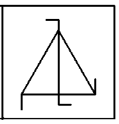
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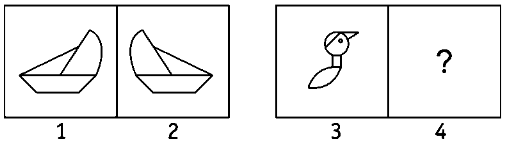
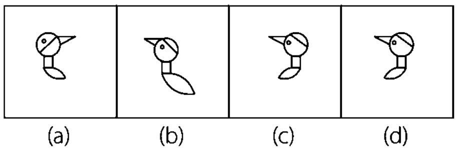
70. Problem Figures

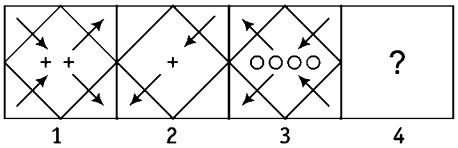


[SSC (CGL) 2008]

Answer Figures

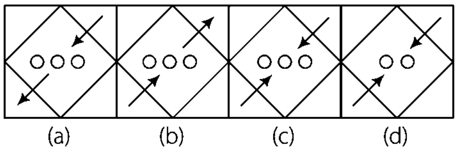


71. Problem Figures

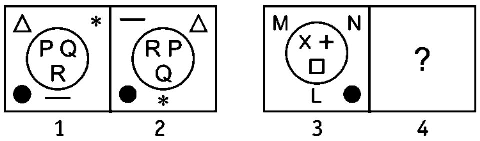


[SSC (CPO) 2008]

Answer Figures



72. Problem Figures


△ *
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M N
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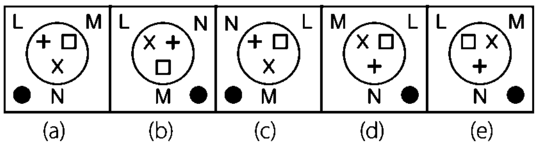
Answer Figures


L M
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L N
X +
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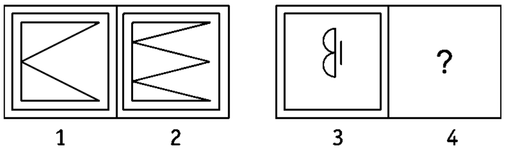
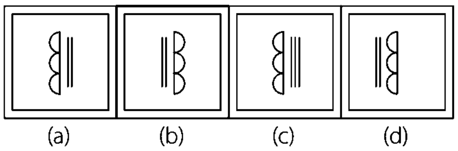
M ●
N L
+ □
X
● M
M L
X □
+
N ●
L M
□ X
+
N ●
(a)
(b)
(c)
(d)
(e)

73. Problem Figures

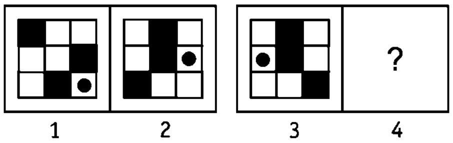


[SSC (CPO) 2010]

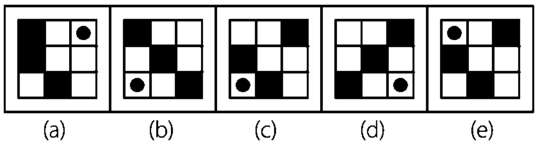
Answer Figures



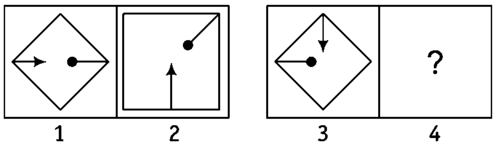
74. Problem Figures



Answer Figures

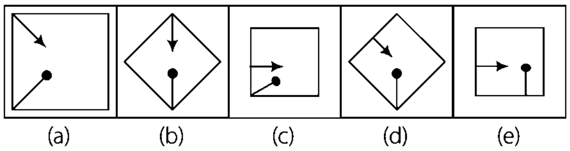


75. Problem Figures

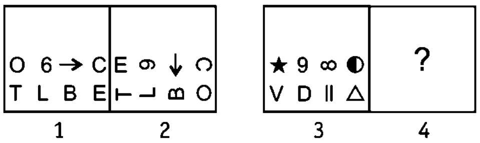


[SSC (CPO) 2008]

Answer Figures

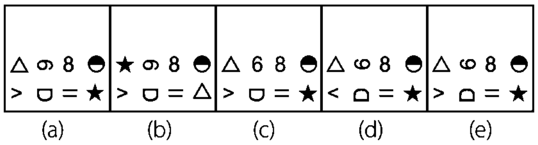


76. Problem Figures

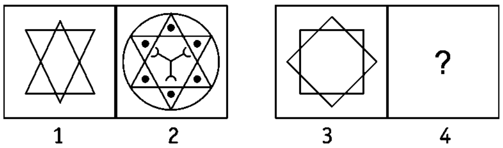

O 6 → C
T L B E
E ൭ ↓ ∩
⊢ ⊣ ω O
★ 9 ∞ ◐
V D Ⅱ △
?
1
2
3
4

[MHA-CET 2011]

Answer Figures

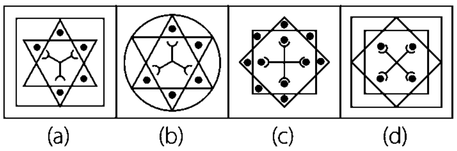

△ ൭ 8 ◓
> ⊍ = ★
★ ൭ 8 ◓
> ⊍ = △
△ 6 8 ◓
> ⊍ = ★
△ ൭ 8 ◓
< ⌂ = ★
△ ൭ 8 ◓
> ⌂ = ★
(a)
(b)
(c)
(d)
(e)

77. Problem Figures

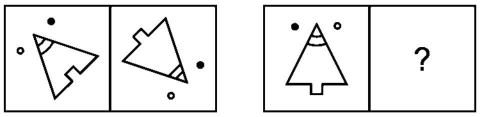


[SSC (CPO) 2009]

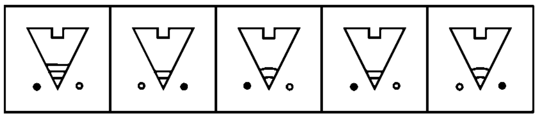
Answer Figures



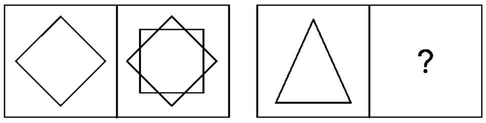
78. Problem Figures


1 2 3 4

Answer Figures

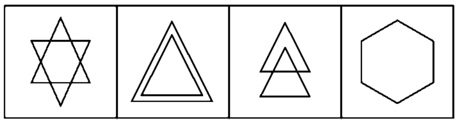

(a) (b) (c) (d) (e)

79. Problem Figures

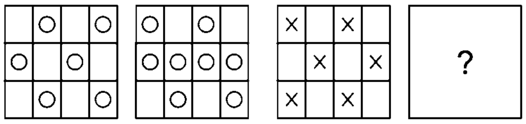

1 2 3 4

[SSC (CPO) 2009]

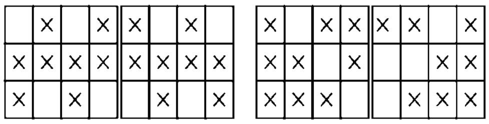
Answer Figures


(a) (b) (c) (d)

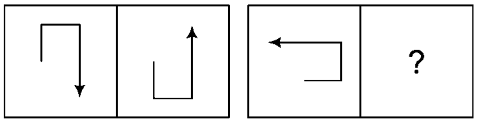
80. Problem Figure


1 2 3 4

Answer Figures

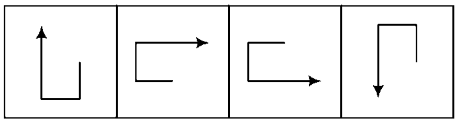

(a) (b) (c) (d)

81. Problem Figure

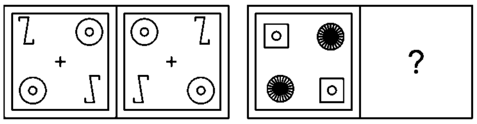

1 2 3 4

[SSC (CPO) 2010]

Answer Figures

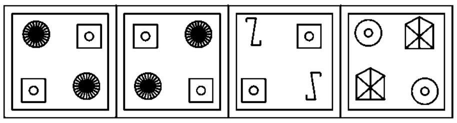

(a) (b) (c) (d)

82. Problem Figures

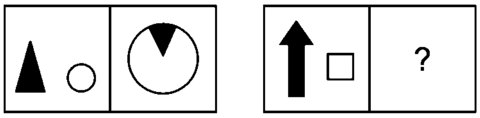

1 2 3 4

[SSC (CPO) 2010]

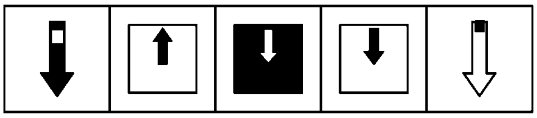
Answer Figures


(a) (b) (c) (d)

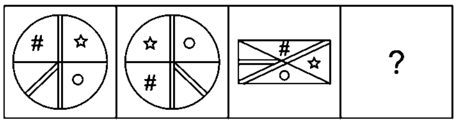
83. Problem Figures


1 2 3 4

Answer Figures

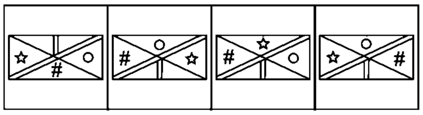

(a) (b) (c) (d) (e)

84. Problem Figures

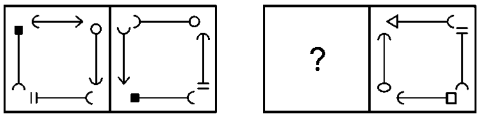

1 2 3 4

[SSC (CPO) 2010]

Answer Figures

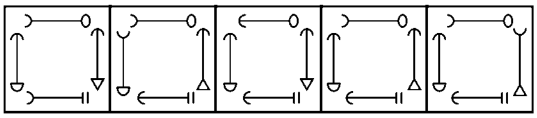

(a) (b) (c) (d)

85. Problem Figures

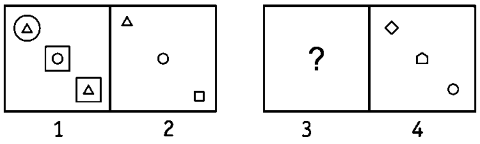

1 2 3 4

[IBPS (PO) 2011]

Answer Figures

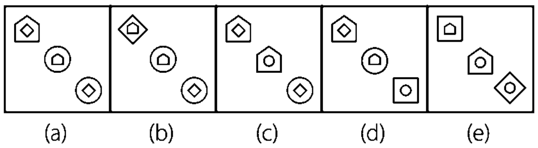

(a) (b) (c) (d) (e)

86. Problem Figures

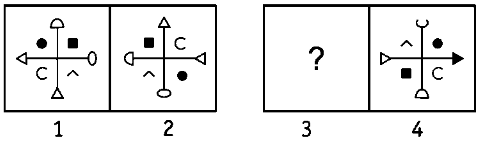


[IBPS (PO) 2011]

Answer Figures

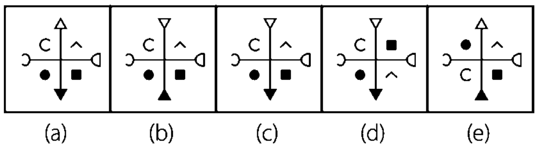


87. Problem Figures



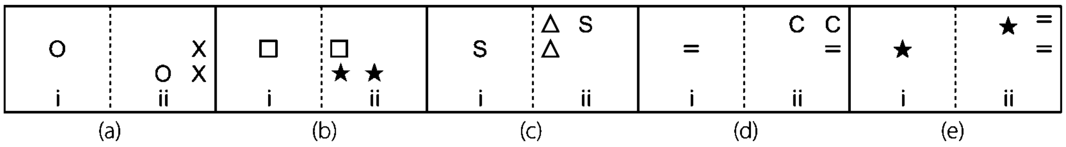
[IBPS (PO) 2011]

Answer Figures

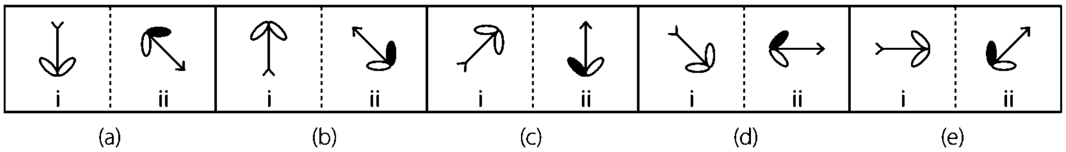


Directions (Q. Nos. 88-95) In each of the following question, element (ii) is related to element (i) in a particular way in four pairs of figures out of the given five. Find out the pair of figures in which the element (ii) is not related to element (i).

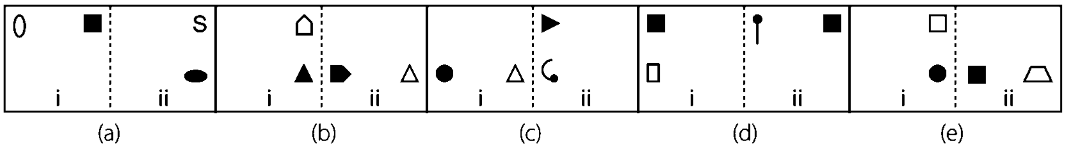
88.



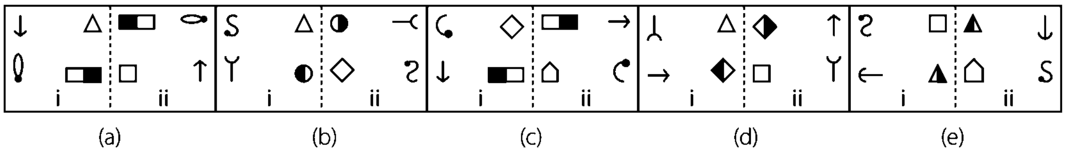
89.



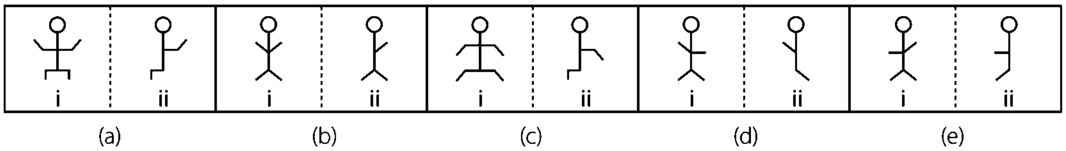
90.



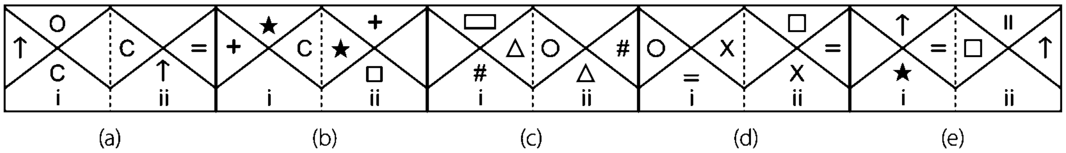
91.



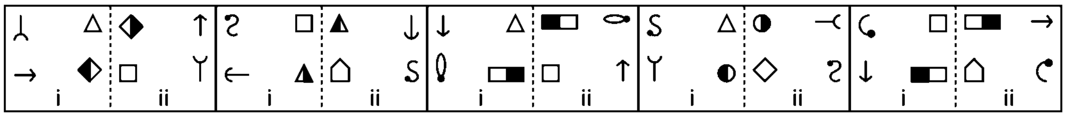
92.



93.

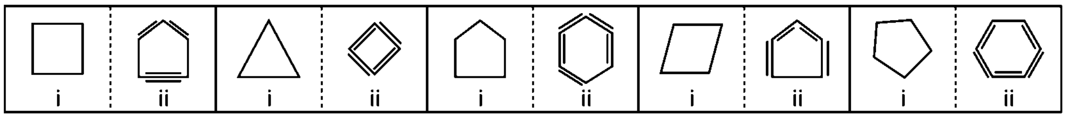


94.



(a) (b) (c) (d) (e)

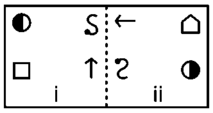
95.

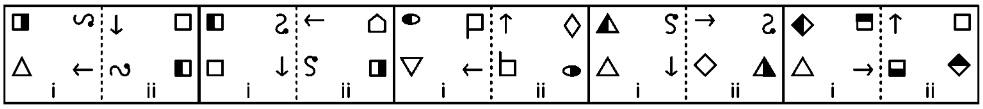


(a) (b) (c) (d) (e)

Directions (Q. Nos. 96-99) In each of the following questions, a related pair of figures is followed by five numbered pairs of figures. Select the pair that has a relationship similar to that in the original pair. The best possible answer is to be selected from a group of fairly close choices.

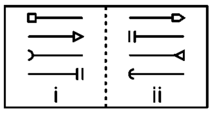
96. Original Pair **Answer Figures**

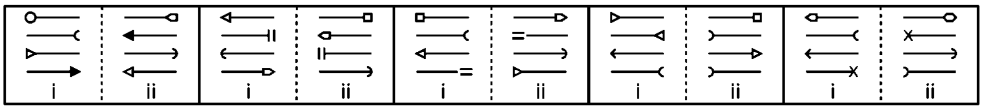




(a) (b) (c) (d) (e)

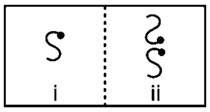
97.

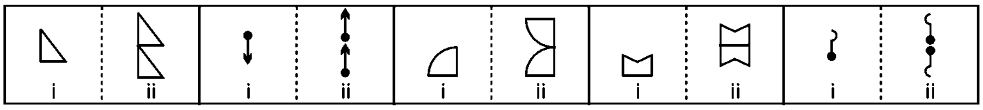




(a) (b) (c) (d) (e)

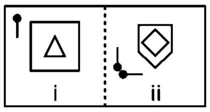
98.

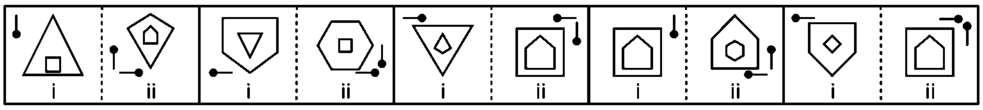




(a) (b) (c) (d) (e)

99.

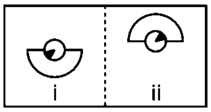


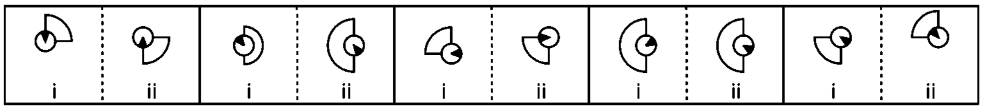


(a) (b) (c) (d) (e)

Directions (Q. Nos. 100 -105) In each of the following questions, a related pair of figures, described as original pair is followed by five answer pairs marked as (a), (b), (c), (d) and (e). Out of these five pairs, four have similar relationship as in the Original pair. Select that pair from answer pairs which does not have similar relationship as in the original pair.

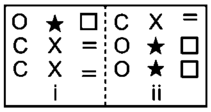
100. Original Pair **Answer Figures**

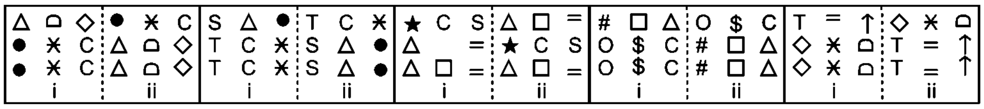




(a) (b) (c) (d) (e)

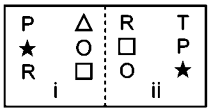
101.

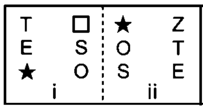




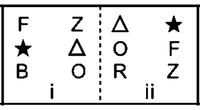
(a) (b) (c) (d) (e)

102. Original Pair **Answer Figures**

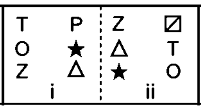

P △ R T
★ O □ P
R □ O ★
i
ii


T □ ★ Z
E S O T
★ O S E
i
ii

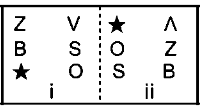
(a)


F Z △ ★
★ △ O F
B O R Z
i
ii

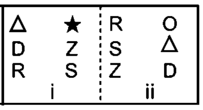
(b)


T P Z ☒
O ★ △ T
Z △ ★ O
i
ii

(c)

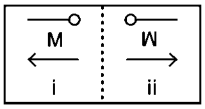

Z V ★ ∧
B S O Z
★ O S B
i
ii

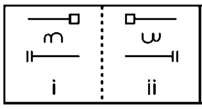
(d)


△ ★ R O
D Z S △
R S Z D
i
ii

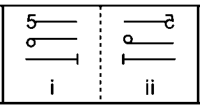
(e)

103.

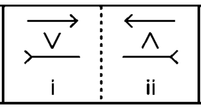




(a)



(b)



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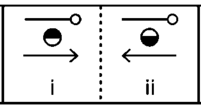

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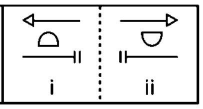

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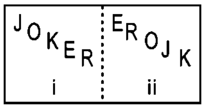
104.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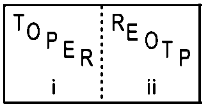
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REOTP
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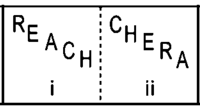
(a)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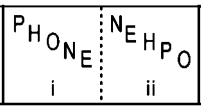
(b)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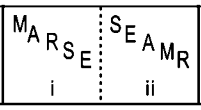
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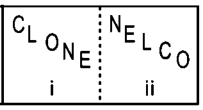
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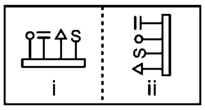

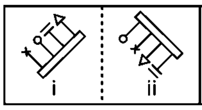

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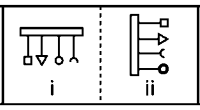

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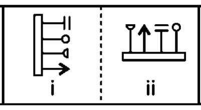

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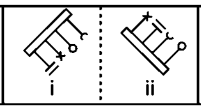

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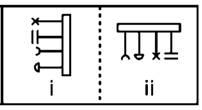
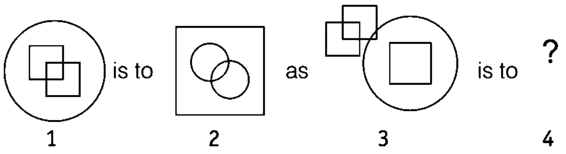


(e)

[Andhra Bank (PO) 2009]

Directions (Q. Nos. 106-116) Find the figure from the answer figure that will replace the question mark (?).

106. Problem Figures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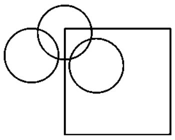
Answer Figures



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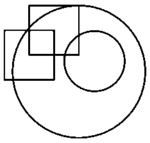

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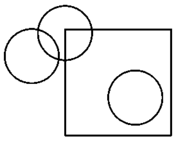

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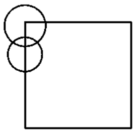

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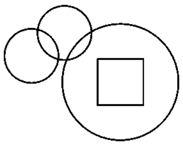
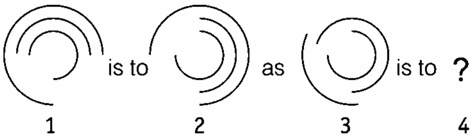


(e)

107. Problem Figures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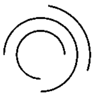
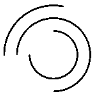
Answer Figures



(a)



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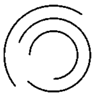

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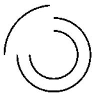

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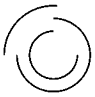

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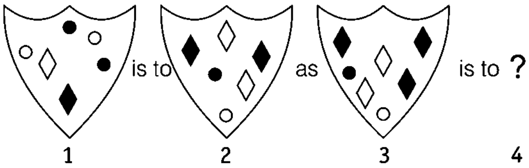
108. Problem Figures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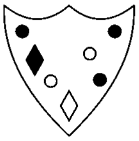
Answer Figures



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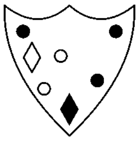

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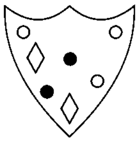

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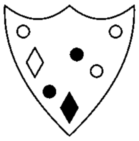

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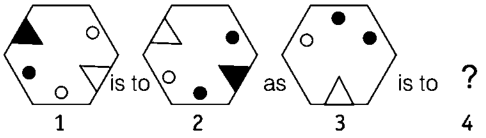
109. Problem Figures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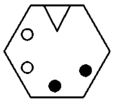
Answer Figures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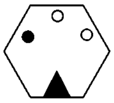
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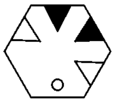
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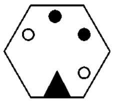
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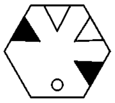
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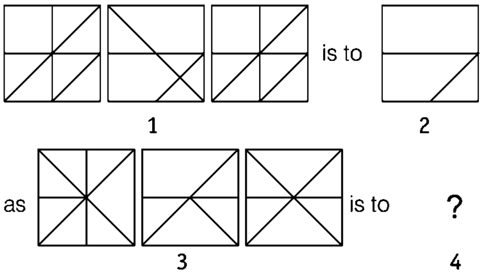
110. Problem Figures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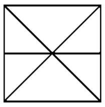
Answer Figures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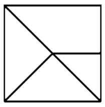
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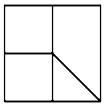
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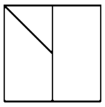
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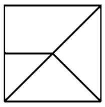
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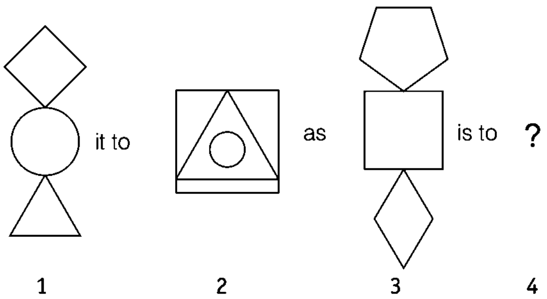
111. Problem Figures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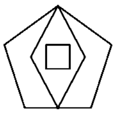
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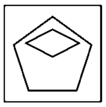
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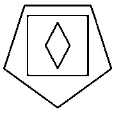
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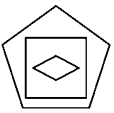
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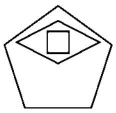
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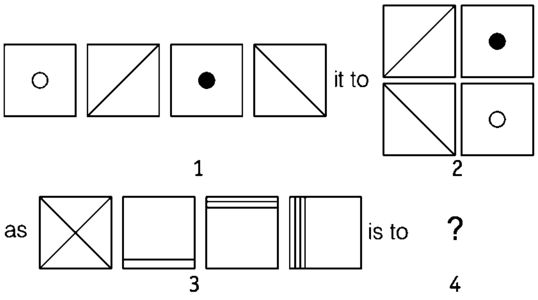
112. Problem Figures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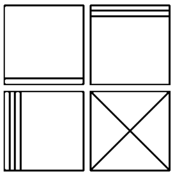
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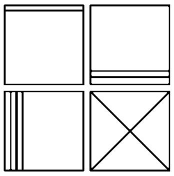
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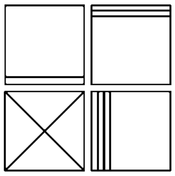
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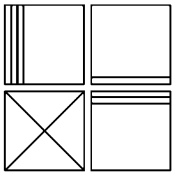
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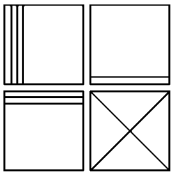
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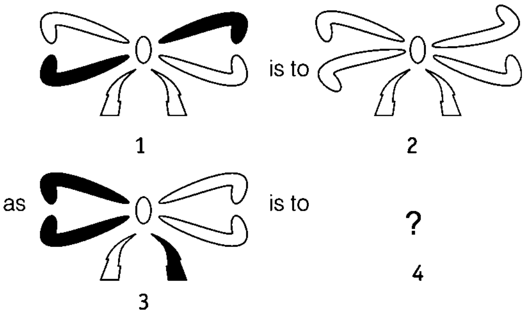
113. Problem Figures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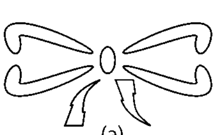
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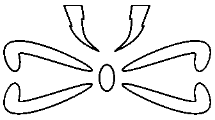
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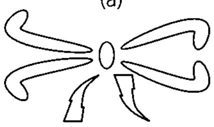
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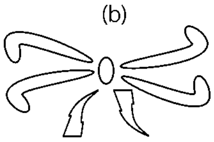
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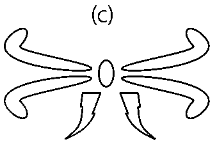
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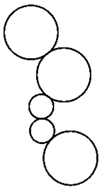
114. Problem Figures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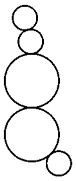
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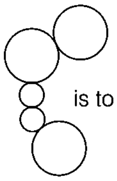
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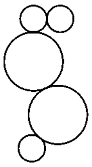
Answer Figures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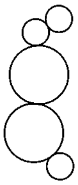
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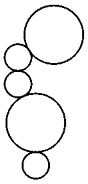
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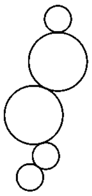
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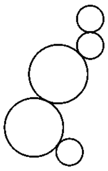
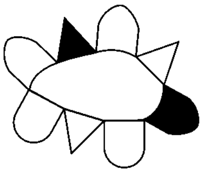

(e)

115. Problem Figures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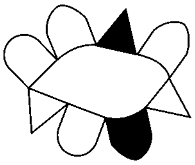

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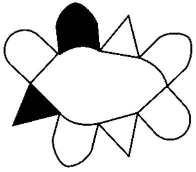

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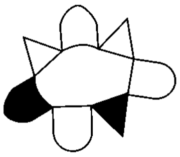
Answer Figures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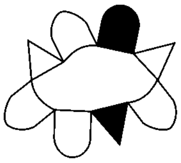
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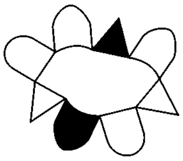
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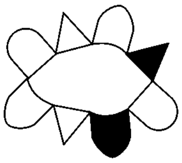
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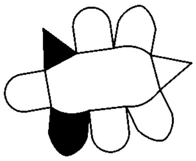
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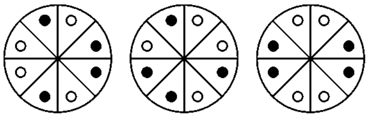
116. Problem Figures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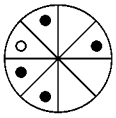

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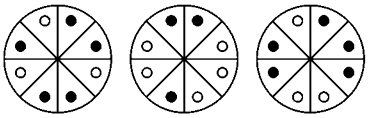

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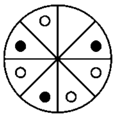
Answer Figures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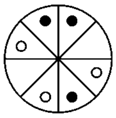
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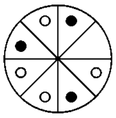
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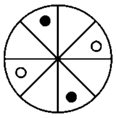
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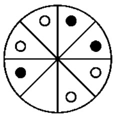

(e)

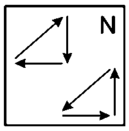
Response & Interpretations (Master Exercise)

1. (*a*) From problem figure (2) to (1), upper right design inside the circle comes to lower right side, lower left design goes to upper right side and upper left side design goes to lower left side and the new design takes place at upper left corner. Similarly, the same rule follows from problem figure (4) to answer figure (3).

2. (*c*) From figure (2) to (1) second element from top rotates 90° clockwise, enlarges in size and becomes first from left. Fourth element rotates 90° clockwise and occupies second position. First element rotates 90° clockwise, enlarges in size and occupies third position. Third element rotates 90° clockwise and occupies fourth position.

3. (*d*) From problem figure (1) to (2), upper design comes in middle position with 90° anti-clockwise rotation, middle design comes in lower side with 90° clockwise rotation and lower design comes in upper side with 180° rotation. In the same manner answer figure (4) is obtained from problem figure (3).

4. (*b*) From fig (2) to (1), the changes in position of elements is given as follows

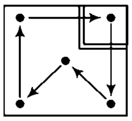


(N) = New Symbol

Hence, option (b) is the correct answer

5. (*b*) From problem figure (2) to (1), each design moves one place clockwise direction and rotates in a certain pattern. Similarly, answer figure (3) is obtained from problem figure (4).

6. (*c*) The pattern of problem figure (2) to (1) is as follows.
Similar rule is followed to obtain answer figure (3) from problem figure (4).



7. (*c*) All the lines are inverted at the same positions.

8. (*c*) Starting from top, first symbol rotates 90° anti-clockwise and occupies third place, second symbol rotates 90° clockwise and occupies last place, third symbol occupies second place and the fourth symbol get inverted and occupies first position.

9. (*b*) The main figure rotates 90° clockwise and is reversed at the new position and the head of the arrow is also reversed.

10. (*a*) The pentagon is inverted and the shaded figure adjacent to it comes inside the pentagon with the upper half shaded portion.

11. (*b*) The second figure is the mirror image of the first figure.

12. (*b*) From first figure to second figure, all the designs are inverted.

13. (*d*) From first unit to second unit, the triangle rotates through 90 ° clockwise and moves to the side of square and a similar triangle appears on the opposite side.

14. (*e*) The main figure rotates through 45° clockwise and dots outside the figure shift to the other side of the line.

15. (*b*) The outer figure remains same and as many lines with dots on the head as the number of sides of the outer figure are formed inside the figure facing the sides of the figure.

16. (*c*) The main figure rotates through 90° clockwise and also moves one side. At the same time one of the lines of one side is deleted. The small sign moves one side anti-clockwise and rotates through 45°.

17. (*d*) From first figure to second figure, the innermost and the outer most designs interchange positions.

18. (*c*) From first unit to second unit, three line segments are added in a set pattern.

19. (*d*) The line with arrow rotates 135° anti-clockwise and its head is reversed. In the other line the black sign at the end becomes white and white sign becomes black.

20. (*a*) From first figure to second figure one small triangle is added. Similarly, small circle would be added in the figure (3) to (4).

21. (*d*) Top left symbol rotates 90° anti-clockwise and other three symbols rotate by 90° in clockwise direction.

22. (*c*) The left and upper portion of the figure rotate through 180° whereas the right and lower portion of the figure rotate through 135° clockwise.

23. (*b*) The figure gets laterally inverted and shaded portion on the figure shifts to the other side. The small circle inside the figure also gets shaded.

24. (*a*) The second figure in the first unit of problem figure can be obtained by rotating the first figure by 180°.

25. (*a*) In all other pairs of figures, all the squares rotate through 90° anti-clockwise.

26. (*b*) In all other pairs, the existing figure is reduced to half.

27. (*d*) In all other pairs, the outer figure rotates through 135° clockwise and inner figure rotates through 90° anti-clockwise.

28. (*c*) In all other pairs, the outer, middle and inner figures become middle, inner and outer figures, respectively.

29. (*a*) In all other pairs, the existing figure rotates through 45° anti-clockwise.

30. (*b*) In all other pairs, figures in section (ii) are the mirror images of the figures in section (i).

31. (*e*) In all other pairs, the existing figure rotates through 45° clockwise and comes inside the new figure.

32. (*e*) In all other pairs, out of sixteen lines outside the square, ten lines are deleted.

33. (*c*) In all other pairs, existing figure rotates through 180°.

34. (*b*) In all other pairs, four lines from outside design of the square are deleted.

35. (*c*) In all other pairs, one line is added to the existing figures.

36. (*c*) In all other pairs, all the cups rotate through 90° anti-clockwise.

37. (*a*) In all other pairs, figures in section (ii) are the mirror images of the figures in section (i).

38. (*c*) In all other pairs, the symbols at first, second and third positions counting from left occupy second, third and first positions respectively and a new symbol replaces the symbol at the third position.

39. (*a*) In all other pairs, all the semi-circles outside the square rotate through 90° anti-clockwise.

40. (*a*) In all other pairs, all the arcs attached with the line except first from below on right side, get reversed.

41. (*c*) The pattern of problem figure is such that the vertical design rotates 45° in clockwise direction and horizontal design goes to opposite direction. Hence, except figure (c), all other figures follow the same pattern as the unnumbered pair of figures.

42. (*a*) The upper left element rotates by 90° clockwise while the other three elements rotate by 90° anti-clockwise.

43. (*e*) The third column becomes first row, first column becomes second row, both with one increased element while the fourth column becomes third row and the second column becomes fourth row, both with one less element.

44. (*d*) The whole figure rotates by 45° anti-clockwise while the element attached at the end gets inverted.

45. (*c*) The upper left element rotates by 45° clockwise and the lower left element rotates by 45° anti-clockwise. The upper right element rotates by 135° clockwise and the lower right element by 135° anti-clockwise.

46. (*c*) The main design rotates through 90° clockwise and shifts downwards. Also, both the pins shift to other side.

47. (*e*) The outer figure rotates through 90° clockwise and the inner figure rotates through 90° anti-clockwise.

48. (*b*) From section (i) to section (ii), the main figure is inverted.

49. (*b*) The upper figure gets inverted, the pins and arrow get inverted and interchange positions.

50. (*b*) All the semi-circles, except second from the right side, get reversed.

51. (*c*) The lowermost figure becomes the uppermost figure, when other figures shift one step downwards. Also, each figure gets reversed at the new position.

52. (*c*) Figure in section (ii) has one side more than the figure in section (i) of the original pair.

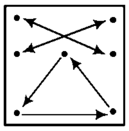
53. (*a*) The inside figure gets enlarged while the outer figure is removed.

54. (*c*) The figure gets reversed and appears with the pre-existing figure from section (i) to section (ii).

55. (*b*) The figure rotates through 90° clockwise and appears in pairs.

56. (*d*) The figure rotate through 180° in such a way that the black portion becomes white.

57. (*e*) From section (1) to section (2), all the symbols change positions as shown in the diagram. Since section (4) of the problem figure correctly matches with section (3) in the same way, hence, no change is required in problem figure (4).



58. (*b*) The figure at the bottom left position gets inverted and is shifted to the central position, on right side the pin rotates through 90° clockwise and is shifted to the bottom right position and design at the top right position rotates through 135° anti-clockwise at the same position.

59. (*d*) The figure (1) gets inverted and become the left side figure of figure (2) while the mirror image of figure (1) becomes the right side figure of figure (2).

60. (*d*) The main figure rotates through 90° clockwise in such a way that its inflated portion is pressed, design inside the figure comes outside to the side where (=) is placed and sign (=) rotates through 90° and shifts to the opposite side, white circle appears in middle of figure.

61. (*c*) The whole figure rotates by 180° and then the circle outside the figure and the line inside the figure moves one step anti-clockwise.

62. (*a*) From section (i) to (ii) of the problem figure, all the symbols rotate 90° anti-clockwise. Also, the sign that acquires the lower position gets enlarged and the signs that acquires upper position gets reduced in size.

63. (*c*) From section (i) to section (ii) of the problem figure, the existing figure gets inverted and parallel lines appear inside it.

64. (*e*) From section (i) to section (ii) of the problem figure, the leftmost figure becomes the outermost figure and other two figures come inside it in such a way that middle and the rightmost figures occupy lower and upper positions, respectively.

65. (*e*) From section (i) to section (ii) of the problem figures, the existing figure gets laterally inverted.

66. (*b*) From the first figure to second figure, the lower letter moves one step in clockwise direction. The upper letter moves two step and is inverted and one side each of two opposite petals become straight.

67. (*e*) First figure, from bottom, moves to the fourth position and is reversed. Its head is also reversed. Fourth figure comes at the third position and its head is also reversed. The third figure comes at the second position and is reversed. Its head is also reversed. Second figure comes at the first position and its head and position get reversed.

68. (*b*) The symbol at the first position is reversed and occupies sixth position, the symbol at the second position rotates 90° clockwise and occupies fourth and fifth positions, the symbol at the third position rotates 45° clockwise and occupies first position, the symbol at fourth and fifth positions are same and occupy third position and its shading get removed and becomes white, the symbol at the sixth position occupies seventh position and is replaced by a new symbol and the symbol at the seventh position occupies the second position.

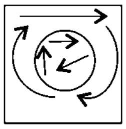
3	4	7
2	5	
1	6	

69. (*d*) The second figure is the mirror image of the first figure.

70. (*b*) The second figure is mirror image of the first figure.

71. (*b*) From first figure to second figure, two arrows and one + are deleted and the remaining two arrows are inverted.

72. (*e*) All the letters inside the circle move one step clockwise. The symbol at the top left position moves one side clockwise, the symbol at the top right position moves one and half side clockwise and the symbol at the central bottom position moves one and half side clockwise.

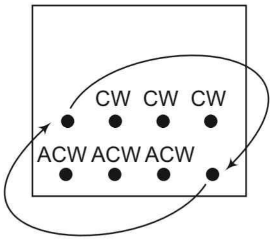


73. (*a*) From first figure to second figure,the number of figures attached to the vertical line increases by 1.

74. (*e*) The shaded portion on the middle and lower rows of the figure move one step to the left whereas the shaded portion on the upper row moves one step to the right. The dot inside the figure ascends one step.

75. (*c*) From first figure to second figure, the main design rotates through 45° anti clockwise and the arrow moves half step in anti-clockwise direction.

76. (*e*) The pattern of problem figure (1) to (2) are as follows



(CW) Clockwise = 90° clockwise rotation
(ACW) Anti-clockwise = 90° anti-clockwise rotation

Similar rule follows from problem figure (3) to answer figure (4).

77. (*c*) From first figure to second figure, one dot is added to every sector of the design and three line segments with curves are introduced in the center.

78. (*d*) The main figure rotates through 180° and the pressed portion of the base is lifted and the two curved lines inside the figure become straight. Also, the two circles outside the main figure interchange their places.

79. (*a*) From first figure to second figure, one similar figure is added in a set pattern.

80. (*b*) From first figure to second figure, the circles of upper row move one block in anti-clockwise direction and two circles are added in the middle row. In similar way, the two crosses of lower row move one block in anti-clockwise direction and two crosses are added in the middle row.

81. (*b*) From the first figure to the second figure, the design is inverted laterally.

82. (*a*) From first figure to second figure, four designs move one step in clockwise direction.

83. (*d*) The larger figure becomes small, gets inverted and occupies the top position inside the smaller figure which gets enlarged.

84. (*c*) From the first figure to the second figure, all the four smaller designs move one sector in anti-clockwise direction.

85. (*c*) From figure (2) to (1), the upper and the left elements rotate by 90° anti-clockwise and go to the right and upper positions respectively while one of their heads gets reversed.The lower element rotates 90° clockwise and goes to the left.The right element rotates 90° clockwise and one of its heads gets reversed and goes to the lower position.

86. (*a*) From figure (2) to (1), upper and middle elements are encircled by the middle and lower elements respectively. The lower element gets enlarged and a clone of the upper element comes inside it.

87. (*c*) From fig. (2) to (1), the vertical bar rotates by 90° anti-clockwise while the horizontal bar rotates by 90° clockwise. The upper-left element goes to upper right, upper right to lower left, lower left to lower right, lower right to the upper left.

88. (*e*) In all other pairs, the existing symbol at the central position shifts to the middle of the border line and two new identical symbols are added in its anti-clockwise direction.

89. (*b*) In all other pairs, the existing figure rotates through 135° clockwise in such a way that first leaf of the figure in clockwise direction gets shaded and the head of the arrow is reversed. In pair (b), second leaf gets shaded and, hence is different from others.

90. (*d*) In all other pairs, the white figure rotates through 90° clockwise and moves two sides clockwise and gets shaded and the black figure is converted into a new figure.

91. (*b*) In all other pairs, all the four symbols interchange position in such a way that the symbol at top left position gets inverted and occupies bottom right position, the symbol at bottom right position rotates through 180° and occupies top left position, the symbol at bottom left position rotates through 90° anti-clockwise and occupies top right position and a new symbol appears at bottom left position.

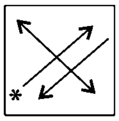
92. (*b*) In all other pairs, one arm and one foot of the figure is deleted.

93. (*c*) In all other pairs of figures, the first symbol counting in anti-clockwise direction of the blank space moves one step clockwise and is replaced by a new symbol and other two symbols interchange positions.

94. (*d*) In all other pairs, the symbol at the top left position gets inverted and occupies the bottom right position, the symbol at the bottom left position rotates through 90° anti-clockwise and occupies the top right position, the symbol at the bottom right position rotates through 180° and occupies the top left position and a new symbol appears at the bottom left position.

95. (*b*) In all other pairs of figures, existing figure is changed into a new figure in such a way that the new figure has one side more than the existing figure with total number of lines inside and outside the new figure equal to the number of sides of the existing figure.

96. (*a*) The symbol at the top left position rotates through 180° and occupies the bottom right position, the symbol at the top right position gets inverted vertically and occupies the bottom left position, the symbol at the bottom right position rotates through 90° anti-clockwise and occupies the top left position and the figure at the bottom left position occupies the top right position in such a way that the number of sides of the figure is increased by one.



97. (*c*) The first, second, third and fourth arrows from the bottom become third, first, second and fourth arrows in such a way that the first arrow gets reversed, the head of the second and third arrows get reversed and the number of sides of the head of fourth arrow is increased by one.

98. (*c*) A water image is added on top of the existing figure from section (i) to (ii) in the original pair.

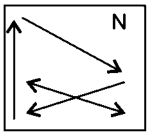
99. (*b*) The pin rotates through 180° and moves one side anti-clockwise and a new pin with head joining towards the first pin appears and both the main figures are changed into new figures with one more side each.

100. (*d*) From section (i) to section (ii) of the problem figure, the outer semi-circle rotates through 180° or 90° either in clockwise or anti-clockwise direction and the shaded design inside the small circle rotates through 180°.

101. (*c*) The symbols appearing in pairs shift to the upper row and appear in singles, whereas the symbols of the upper row shift downwards and appear in pairs.

102. (*b*) The pattern of change from (ii) to (i) of the unnumbered pair of figure is as follows.

Hence, except figure (b) all other figures follow the same pattern as unnumbered pair of figures.



N = New symbol

103. (*d*) In the unnumbered pair of figures, from (i) to (ii), the first and last element get reversed at their places while the middle element gets inverted.

Hence, except figure (d), all other figures follow the same pattern as unnumbered figure.

104. (*a*) The pattern of unnumbered figure is as follows

From (i) to (ii), the first element becomes fourth, second becomes third, third becomes last, fourth becomes first and fifth becomes second from top to bottom.

Hence, except figure (a), all other figures follow the same pattern as unnumbered figure.

105. (*b*) The whole figure rotates by 90° anti-clockwise.The first and the third and the second and the fourth element interchange positions.

106. (*c*) Circles changes to squares and *vice-versa* from figure (1) to (2).

107. (*e*) From figure (1) to (2), the figure rotates by 90° in clockwise direction.

108. (*d*) From figure (1) to (2), black circles turns to white diamonds, white circles turn to black diamonds and *vice-versa.*

109. (*b*) From figure (1) to (2), black objects turn to white and *vice-versa.*

110. (*e*) Only the lines that appears three times in the same position in the first three squares are carried forward to the final square.

111. (*a*) From figure (3) to (2), the circle goes inside the triangle and the triangle in turn goes inside the square, which turns on to its base. And, from figure (3) to (4), the square goes inside the diamond and the diamond in turn goes inside the pentagon, which turns onto its base.

112. (*a*) From figure (1) to (2), square 1 moves to bottom right, square 2 moves to top left, square 3 moves to top right and square 4 moves to bottom left.

113. (*c*) From figure (1) to (2), all white segments remain the same but black segments turns white and flip over.

114. (*b*) From figure (1) to (2), the shape of string remain as it is but with a reversal of small circles to bigger circles and *vice-versa.*

115. (*d*) From figure (1) to (2), all the figures attached to the central figure remains in the same order and move in one direction.

116. (*a*) From figure (1) to (2), only the dots which appear twice in the same segment in the previous three circles are carried forward.

3

Classification

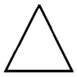
Classification is defined as 'to assort the different items of a given group on the basis of certain common quality they possess and spot the odd man out.

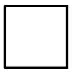
Different type of questions covered in this chapter are as follows

- Choosing the Odd Figure
- Choosing Figure with Same Characteristics

This chapter 'Classification' covers several different criteria which can be applied to classify the given items into a particular group. This classification can be based on some common properties which they possess like shape, number of sides, division of figures etc. Here, the objects which possess these common properties are classified into the same group while the object which does not possess these common properties (*i.e.,* the odd one) is to be eliminated from the group.

Let us consider an example


(a)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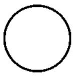
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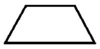

(d)

In all the figures given above, except circle, all are formed with straight lines. Hence, circle does not fit into this group and is the odd one.

Several logics are applied for classification of given figures into a particular group based on some similarity pattern which is followed by all the figures of the group. This similarity pattern establishes a sort of equality between the figures and the figure which does not follow the similarity pattern (*i.e.,* shows inequality) is to be eliminated from the group.

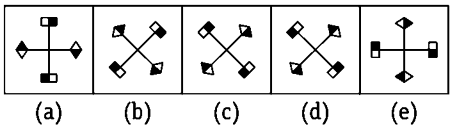
There are many criteria used for establishing equality-inequality between the figures which are given below

1. Rotation of Same Figure

This is the most common type of classification. The similar figures are actually the rotated forms of the same figure in clockwise or anti-clockwise direction. The figure which comes out to be different from other is that figure which cannot be obtained by rotation of either of the other figures.

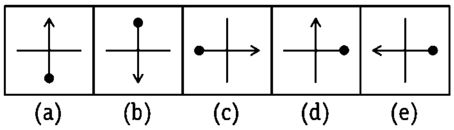
Directions (Example Nos. 1-2) In the following questions, a group of five figures is given. Out of which four figures are similar to each other in a certain way and one is different from other. Find the odd figure out.

***Ex* 1**



Sol. (*d*) After examining the above figure, it is found that except (d), all figures can easily be obtained by clockwise and anti-clockwise movement of each other.

***Ex* 2**



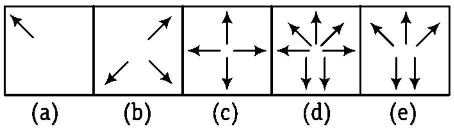
Sol. (*d*) All figure except figure (d), can be rotated to form different figures.

2. Number of Elements or Lines

A group of figure may be classified on the basis of number of elements or the number of lines present in figures. The figures can also be classified on even or odd number of lines or elements present in figures. Classification can also be done on the ratio of number of lines and elements.

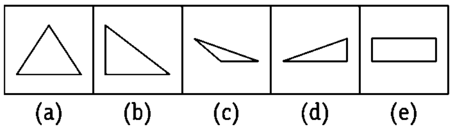
Directions (Example Nos. 3-6) In the following questions, a group of five figures is given. Out of which four figures are similar to each other in a certain way and one is different from other. Find the odd figure out.

***Ex* 3**



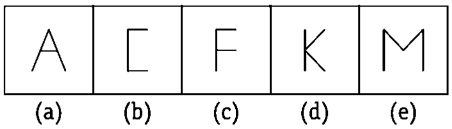
Sol. (c) All except, figure (c) contains odd number of arrows.

***Ex* 4**



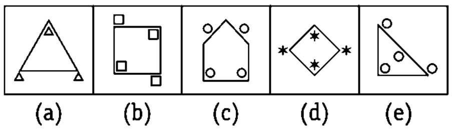
Sol. (*e*) Except figure (e), all have three sides but in figure (e) there are four sides.

***Ex* 5**



Sol. (e) Except figure (e), all figures are made-up of three simple lines but in option (e) four lines are involved.

***Ex* 6**



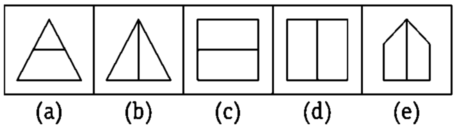
Sol. (*a*) Except figure (a), all figures have equal number of figures both inside and outside of the main figure.

3. Division of Figures

This type of classification is done on the equal or inequal division of figures or division of figure in some specified ratio or parts.

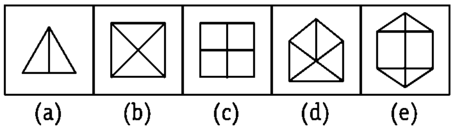
Directions (Example Nos. 7-8) In the following questions, a group of five figures is given. Out of which four figures are similar to each other in a certain way and one is different from other. Find the odd figure out.

***Ex* 7**



Sol. (*a*) Except figure (a), all figures are divided into two equal parts.

***Ex* 8**



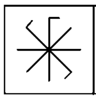
Sol. (*a*) Here each figure except (a) is divided such that each figure contains as many parts as equal to the number of sides in each figure.

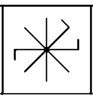
4. Similarity of Figures

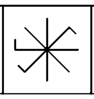
Classification on the basis of similarity of figure is done when orientation, shape, measure of angle or method of presentation of group is same except for the odd figure.

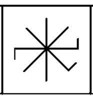
Directions (Example Nos. 9-10) In the following questions, a group of five figures is given. Out of which four figures are similar to each other in a certain way and one is different from other. Find the odd figure out.

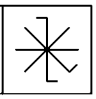
***Ex* 9**


(a)


(b)

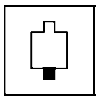

(c)

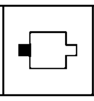

(d)

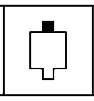

(e)

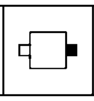
Sol. (*d*) Let us consider the two adjacent bent lines as a pair. Then, in each figure except (d), there are two straight lines between the bent pair and the remaining bent line when the direction of bent is considered.

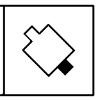
***Ex* 10**


(a)


(b)


(c)


(d)


(e)

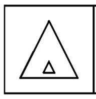
Sol. (*d*) Except figure (d), in all the figures, middle of square is open that touches the blank box.

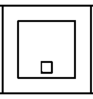
5. Relation between Elements of Figure

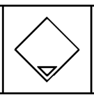
In this type of classification, the elements of the figure bears a certain relationship between them in which the odd figure does not posses. This relation can be based on shape of elements presents, inversion of elements etc.

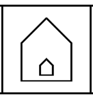
Directions (Example Nos. 11-12) In the following questions, a group of five figures is given. Out of which four figures are similar to each other in a certain way and one is different from other. Find the odd figure out.

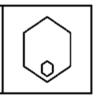
***Ex* 11**


(a)


(b)

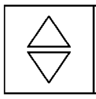

(c)

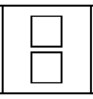

(d)

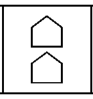

(e)

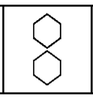
Sol. (c) Except figure (c), in all the figures, both the inside and outside figures are similar but differ in size.

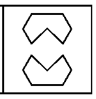
***Ex* 12**


(a)


(b)


(c)


(d)


(e)

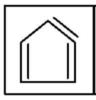
Sol. (c) Except figure (c), in all the figures, top and bottom figures are mirror images of one another.

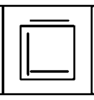
6. Interior-Exterior Consideration of Elements

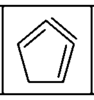
A figure can be formed from two or more elements, it is likely that some elements may lie in interior of other elements while some may lie in the exterior of the other elements. This consideration can be used for classification of elements from a group.

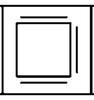
Directions (Example Nos. 13-14) In the following questions, a group of five figures is given. Out of which four figures are similar to each other in a certain way and one is different from other. Find the odd figure out.

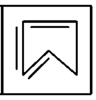
***Ex* 13**


(a)


(b)

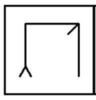

(c)

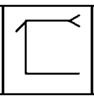

(d)

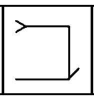

(e)

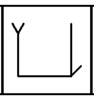
Sol. (*d*) Only figure (d) does not contain any element present in the interior of the closed figure.

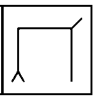
***Ex* 14**


(a)


(b)


(c)


(d)


(e)

Sol. (*a*) In all figure, except (a) the line attached to the corner of figure is facing outside the figure but in figure (a) it is inside the figure.

Based on the classification explained above, there can be two types of questions which are asked in exams.

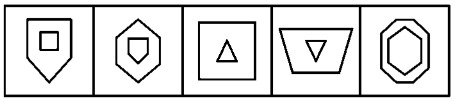
Type 1 Choosing the Odd Figure

In this type of questions, four/five figures labelled as (a), (b), (c), (d) and/or (e) are given, three/four of these four/five figures have common features/characteristics and hence are similar in a certain way. One of the figure does not share the common characteristics and hence does not fit with other figures. You have to select that figure which does not belong to the group and this figure is your answer.

Following examples will give you a better idea about such type of questions

Directions (Example Nos. 15-25) In the following questions a group of four/five figures are given. Out of which three/ four figures are similar to each other in a certain pattern. Find the figure which does not belong to the group.

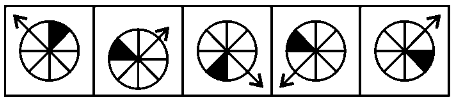
Ex 15



(a) (b) (c) (d) (e)

Sol. (*e*) In all the figures, except figure (e), two concentric figures are arranged in such a way that inner figure has one side less than the outer figure.

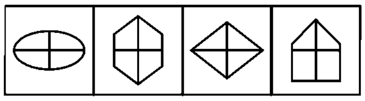
Ex 16



(a) (b) (c) (d) (e)

Sol. (*b*) In all the figures, except figure (b), arrow is one step away from the shaded sector of the circle in anti-clockwise direction.

Ex 17

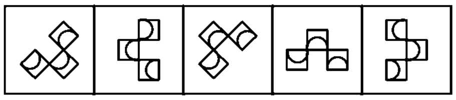


(a) (b) (c) (d)

[SSC (DEO) 2009]

Sol. (*d*) All the figures, except figure (d) are divided into four equal parts.

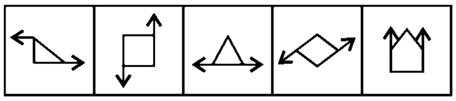
Ex 18



(a) (b) (c) (d) (e)

Sol. (*b*) All others are rotated forms of the same figure.

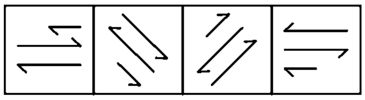
Ex 19



(a) (b) (c) (d) (e)

Sol. (*e*) In all the figures, except figure (e), arrows are facing in opposite direction.

Ex 20

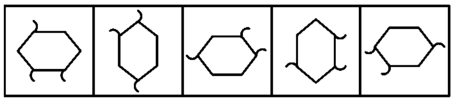


(a) (b) (c) (d)

[SSC (10+2) 2008]

Sol. (*d*) Two lines on the extreme ends of all the figures, except figure (d) have same direction of arrows. In figure (d), the direction of arrows are different.

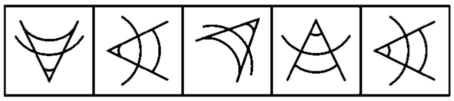
Ex 21



(a) (b) (c) (d) (e)

Sol. (*b*) In all the figures, except figure (b), arcs in pair outside the hexagon are two sides ahead of the single arc.

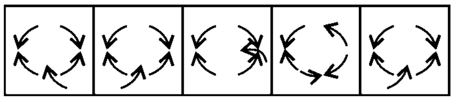
Ex 22



(a) (b) (c) (d) (e)

Sol. (*b*) In all the figures, except figure (b), all the curved lines have curves in the same direction. In figure (b), the upper line has curve in opposite direction.

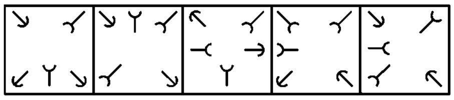
Ex 23



(a) (b) (c) (d) (e)

Sol. (*a*) In all the figures, except figure (a), three arrows are in anti-clockwise direction and two arrows are in clockwise direction.

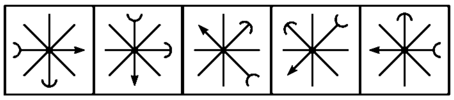
Ex 24



(a) (b) (c) (d) (e)

Sol. (*a*) In all the figures, except figure (a), three arrows are with the open head (Υ) and two arrows are with close head (↑). Figure (a) is different from the other figures in this way.

Ex 25



(a) (b) (c) (d) (e)

[Corporation Bank (PO) 2011, Allahabad Bank (PO) 2009]

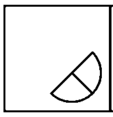
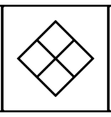
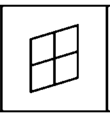
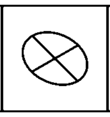
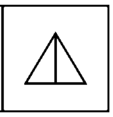
Sol. (*b*) All are rotated forms of same figure.

Practice Corner **3.1**

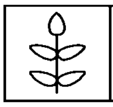
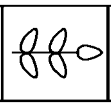
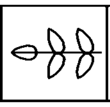
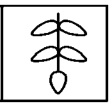
Build your Confidence...

Directions (Q. Nos. 1-42) In each of the following questions, four/five figures are given. Three/four are similar in a certain way and so form a group. Find out which one of the figures does not belong to that group.

1.


(a)

(b)

(c)

(d)

(e)

2.


(a)

(b)

(c)

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[SSC (10+2) 2012]

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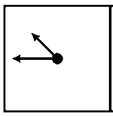
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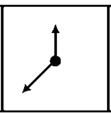
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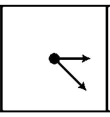
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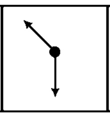
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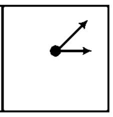
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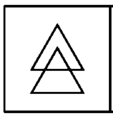
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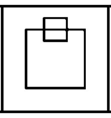
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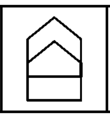
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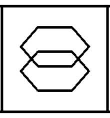
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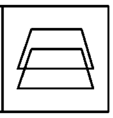
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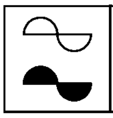
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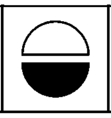
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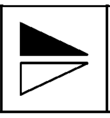
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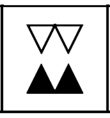
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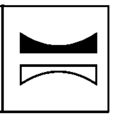
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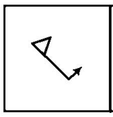
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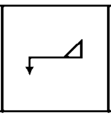
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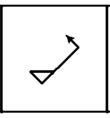
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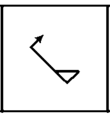
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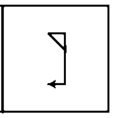
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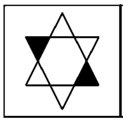
[Allahabad Bank (PO) 2010]

7.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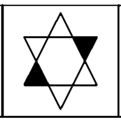
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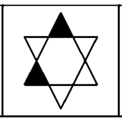
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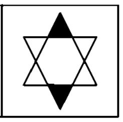
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[SSC (Steno) 2012, SSC (DEO) 2009]

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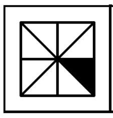
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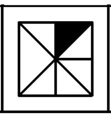
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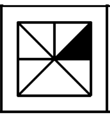
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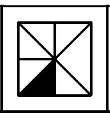
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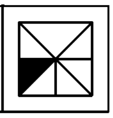
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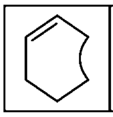
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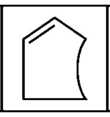
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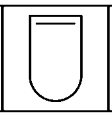
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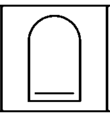
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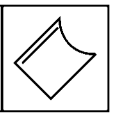
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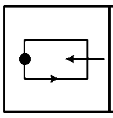
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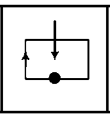
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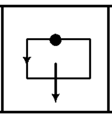
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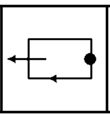
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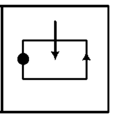
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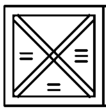
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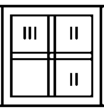
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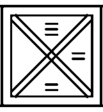
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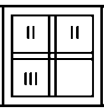
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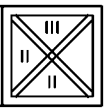
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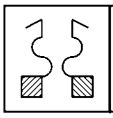
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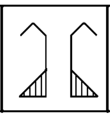
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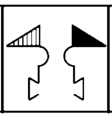
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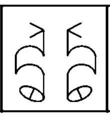
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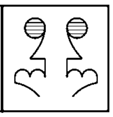
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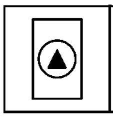
[Corporation Bank (PO) 2011, Allahabad Bank (PO) 2009]

13.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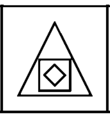
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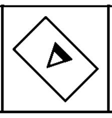
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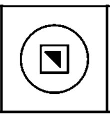
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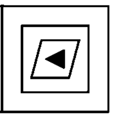
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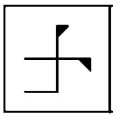
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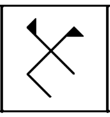
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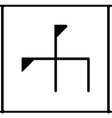
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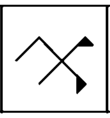
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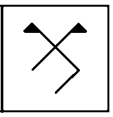
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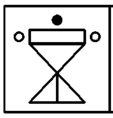
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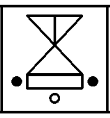
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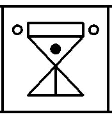
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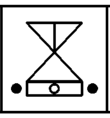
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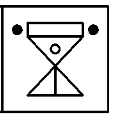
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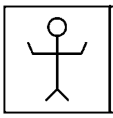
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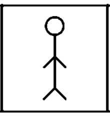
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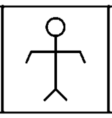
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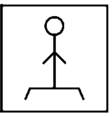
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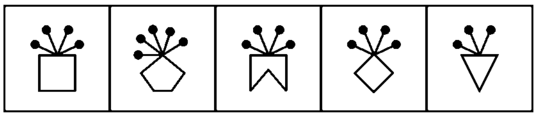
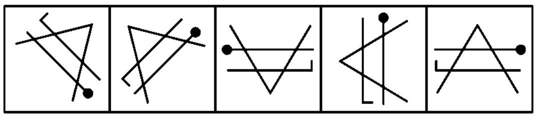
[SSC (10+2) 2007]

17.



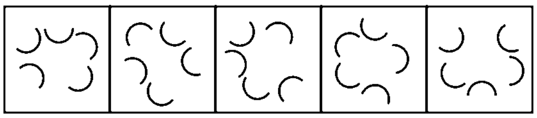
(a) (b) (c) (d) (e)

18.



(a) (b) (c) (d) (e)

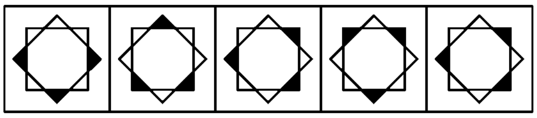
19.



(a) (b) (c) (d) (e)

[Syndicate Bank (PO) 2010]

20.



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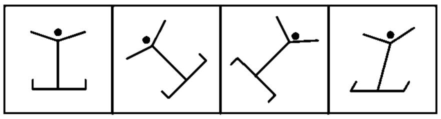

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[SSC (Constable) 2012, SSC (Multitasking) 2011]

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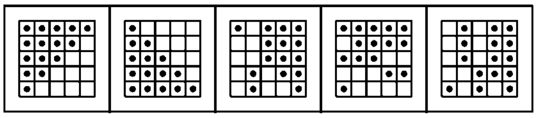

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[UCO Bank (PO) 2010]

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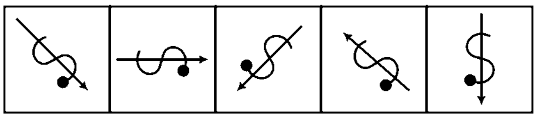

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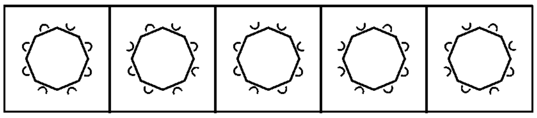

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[Corporation Bank (PO) 2011, UCO Bank (PO) 2010]

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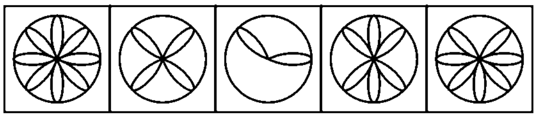

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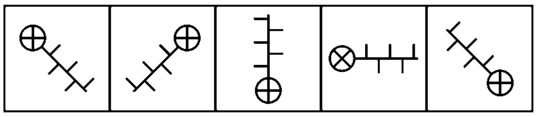

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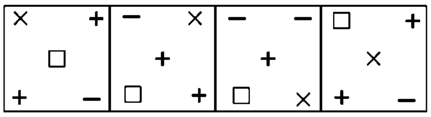

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[SSC (Steno) 2012]

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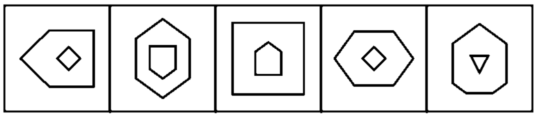

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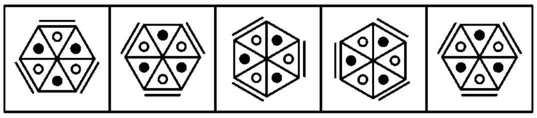

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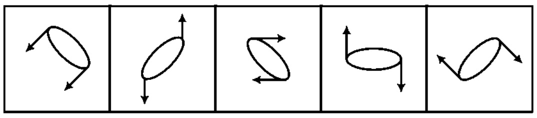

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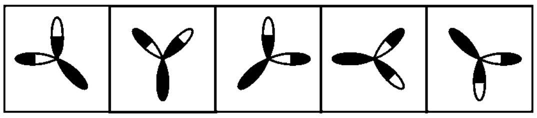

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[UCO Bank (PO) 2010]

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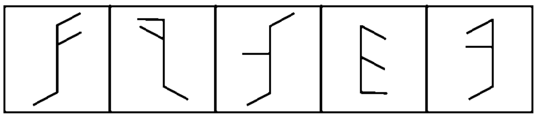

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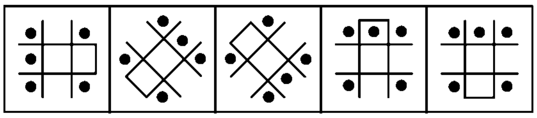

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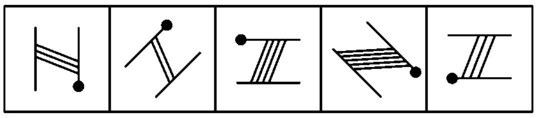

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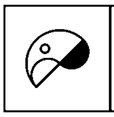
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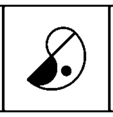
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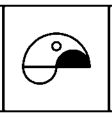
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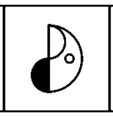
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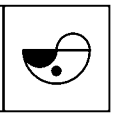
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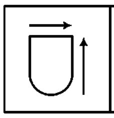
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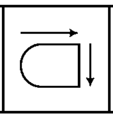
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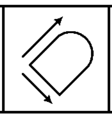
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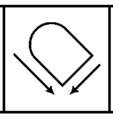
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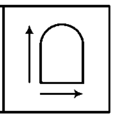
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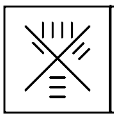
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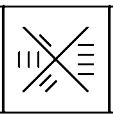
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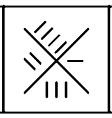
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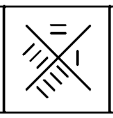
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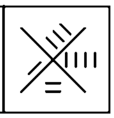
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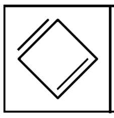
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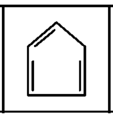
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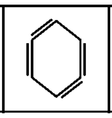
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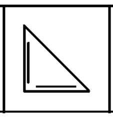
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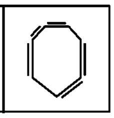
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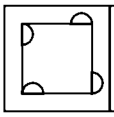
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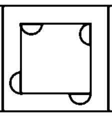
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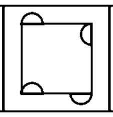
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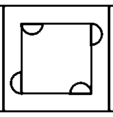
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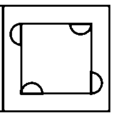
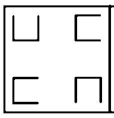

(e)

40.

(a)	(b)	(c)	(d)	(e)
★ = ● S X X	● = □ ★ ★ 0	S = C □ = △	= ● □ C ● S	△ X C □ S ●

41.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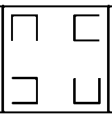
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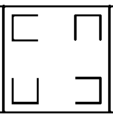
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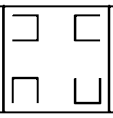
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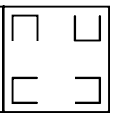
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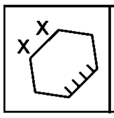

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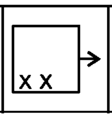

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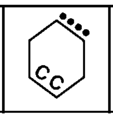

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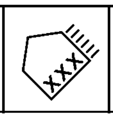

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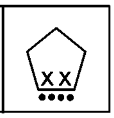


(e)

Response & Interpretations (3.1)

1. (d) All other figures are divided into equal parts.
2. (c) Except (c), all have undivided leave on top of the line.
3. (d) In figure (d), the length of both the arrows is same.
4. (b) In all the other figures, both the overlapping figures are identical having same area.
5. (a) In all other figures, the lower figure is obtained by inverting the upper figure and shading it.
6. (b) In all figures, except figure (b), triangle is formed on the same side in which the arrow is directed. In figure (b), triangle and arrow are directed opposite to each other and hence, does not belong to this group.
7. (c) In all the other figures except (c) the shaded portions lie opposite to each other.
8. (a) In all figure except (a) square is divided into seven parts and one part is shaded.
9. (e) Only in figure (e), the line segment inside the figure is adjacent to the curved portion of the figure.
10. (e) In all other figures, except figure (e) arrow and black dot are infront of each other.
11. (e) In all the figures. except figure (e) group of three lines (||| or ≡) is on the anti-clockwise end.
12. (c) In all others, there is a pair of laterally inverted images.
13. (c) In all other figures, there are three figures which are not identical.
14. (a) In all other figures, shaded triangle and line segment attached to straight line lie on the same side.
15. (d) In all the other figures, no small circle is in between the parallel lines.
16. (b) Except in figure (b), all the other figures comprise of 6 line segments.
17. (c) In all other figures, the number of pins at the top of the figure are equal to the number of sides of the figure.
18. (a) In all other figures, the line is bent towards the pins.
19. (d) In all others, three arcs face outside and two inside.
20. (a) In figure (a), the vertices of the same square are shaded, so is different from other.
21. (c) Except (c), all figure have their legs facing in upward direction.
22. (e) In all others, the arrangement of dots is in a sequence *i.e.,* 1-2-3-4-5 dots.
23. (d) All the other figures, except figure (d) are rotated forms of same figure.
24. (a) In all others equal number of arcs are facing inside and outside.
25. (e) The number of leaves is odd in figure (e), whereas it is even in all other figures.
26. (c) Only in figure (c), the cross inside the circle is directly attached with the main line segment.
27. (c) Except (c), all have two plus and one minus but in figure (c) it is *vice-versa*.
28. (c) In all other figures, inner figure has less number of sides than the outer figure.
29. (d) In all the figures, except figure (d), the line is placed adjacent to the unshaded circle.

30. (*a*) In all other figures, both the arrows attached to the main figure are in opposite direction to each other.

31. (*c*) All other figures except (c) are rotated forms of the same figure.

32. (*a*) In all other figures, one of the small lines attached to the main line segment is perpendicular to it.

33. (*d*) In all other figures, there are only two dots on the base of the figure.

34. (*c*) In all other figures, transverse lines between the two parallel lines are inclined towards the dot on the figure.

35. (*c*) In all other figures, small semi-circle and dot inside the large semi-circle are identical. *i.e.,* either shaded or unshaded in similar manner.

36. (*b*) In all figures except (b) the two arrows are in opposite direction *i.e.,* one in clockwise direction and other in anti-clockwise direction.

37. (*d*) Only in figure (d), the number of lines (1, 2, 3, 4) are arranged in order, in all other figures, the order of number of lines is not maintained.

38. (*d*) In all other figures, the number of line segments on the boundary of the figure is two less than the number of sides of the figure.

39. (*c*) Figure (c) is different from other figures in the way that this is the only figure in which two semi-circles are present on the same side of the square.

40. (*e*) In all other figures except (e), any two of the symbols are identical whereas in figure (e) all the symbols are different.

41. (*a*) In figure (a), two of the cups are placed in the same direction. In all other figures, all the cups are placed in different directions.

42. (*e*) In all the other figures except (e), symbols inside and outside the figures are placed along the different sides of the figures.

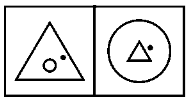
Type 2 Choosing Figure with Same Characteristics

In this type of question, a set of problem figure and a set of answer figures are given. The problem figures are related to each other on the basis of some common properties and one of the answer figures belongs to the group of problem figures on the basis of these common properties. You are required to take out that figure which belongs to the group of problem figures and that figure is your answer.

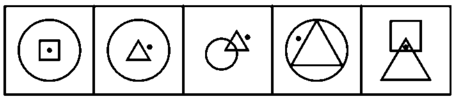
Following examples will give you a better idea about such type of questions

Directions (Example Nos. 26-32) In each of the following questions, there are two problem figures followed by answer figure marked as (a), (b), (c), (d) and (e). The two problem figure have some common characteristics. Select the answer figure which has the same characteristics as that of the problem figure.

***Ex* 26** **Problem Figures**



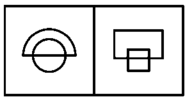
Answer Figures



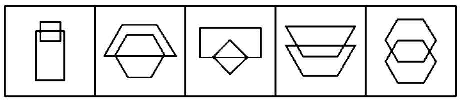
(a) (b) (c) (d) (e)

Sol. (*b*) A dot is placed on right hand side of the inner figure.

***Ex* 27** **Problem Figures**



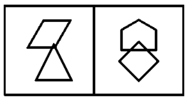
Answer Figures



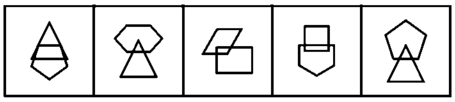
(a) (b) (c) (d) (e)

Sol. (*b*) Two figures intersect each other and the upper one is enlarged form of half of the lower one.

***Ex* 28** **Problem Figures**



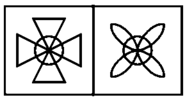
Answer Figures



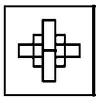
(a) (b) (c) (d) (e)

Sol. (*d*) Two figures with a difference in number of their sides equal to one, intersect each other.

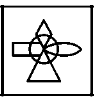
Ex **29** **Problem Figures**



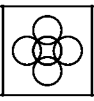
Answer Figures



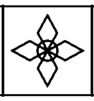
(a)



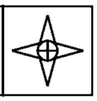
(b)



(c)



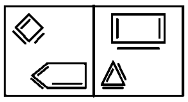
(d)



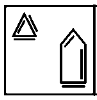
(e)

Sol. (*d*) Four identical figures are connected with one another at the centre of the circle. Figure (d) also possess same characteristics and hence, belongs to the same group.

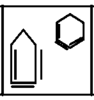
Ex **30** **Problem Figures**



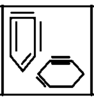
Answer Figures



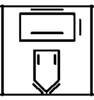
(a)



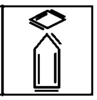
(b)



(c)



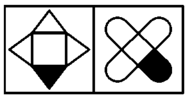
(d)



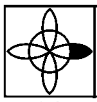
(e)

Sol. (*b*) Each of the problem figures contains two figures, one of which has one side more than that of other. The figure with less number of sides has two lines outside and one line inside the figure and figure with more number of sides has two lines inside and one line outside the figure. Figure (b) has the similar property and hence, belongs to the group of problem figures.

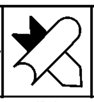
Ex **31** **Problem Figures**



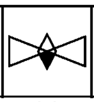
Answer Figures



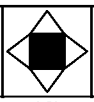
(a)



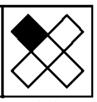
(b)



(c)



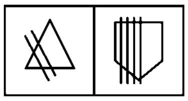
(d)



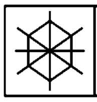
(e)

Sol. (*e*) Two identical figures intersect each other and any one outer portion of the figure is shaded. Figure (e) has the similar characteristics and hence, belong to the same group.

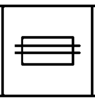
Ex **32** **Problem Figures**



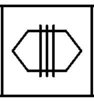
Answer Figures



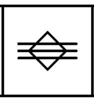
(a)



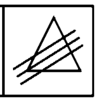
(b)



(c)



(d)

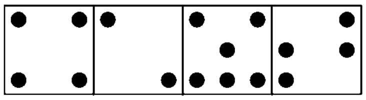


(e)

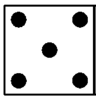
Sol. (*d*) The number of lines intersecting the figure is one less than the number of sides of the figure. Figure (d) has the same characteristics and hence belong to the group of problem figures.

Directions (Example Nos. 33-36) In each of the following question, there is a set of four figures named as problem figure followed by answer figure marked as (a), (b), (c), (d) and (e). The four problem figure have some common characteristics. Select the answer figure which has the same characteristics as that of the problem figure.

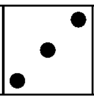
Ex **33** **Problem Figures**



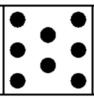
Answer Figures



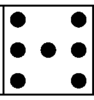
(a)



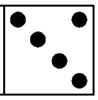
(b)



(c)



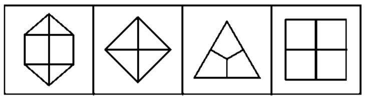
(d)



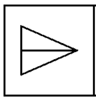
(e)

Sol. (c) When we closely observe the problem figure, then we find that there are even number of dots in the problem figure. So, the answer figure having even number of dots is the correct answer *i.e.*, opiton (c).

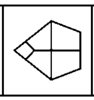
Ex **34** **Problem Figures**



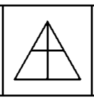
Answer Figures



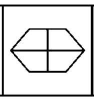
(a)



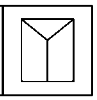
(b)



(c)



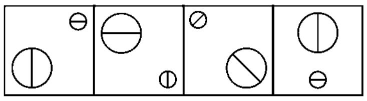
(d)



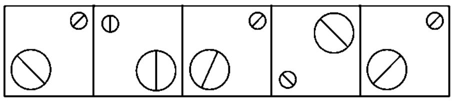
(e)

Sol. (*b*) Each problem figure is divided into as many parts as the number of sides in it. Hence, the correct answer figure bearing the same characteristics is given in option (b).

Ex **35** **Problem Figures**



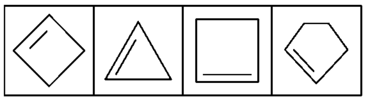
Answer Figures



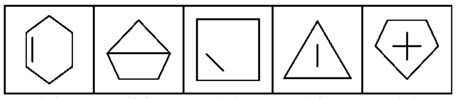
(a) (b) (c) (d) (e)

Sol. (*a*) In each of the problem figure, the diagonals of circles are perpendicular to each other. This same characteristic is shown by option figure (a).

Ex **36** **Problem Figures**



Answer Figures



(a) (b) (c) (d) (e)

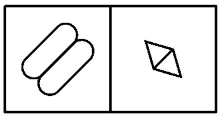
Sol. (*a*) In each of the problem figure, the line segment present inside the main element lie along one of the sides of main element. The same characteristic is shown by option figure (a).

Practice Corner **3.2**

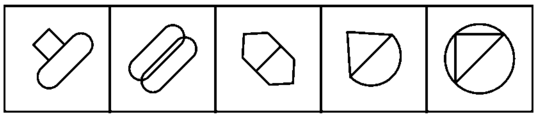
Build your Confidence...

Directions (Q. Nos. 1-26) In each of the following questions, there are two problem figures followed by the answer figures marked by (a), (b), (c), (d) and (e). The two problem figures have some common characteristics. Select the answer figure which has the same characteristics.

1. Problem Figures

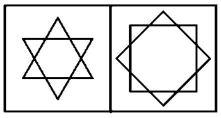


Answer Figures

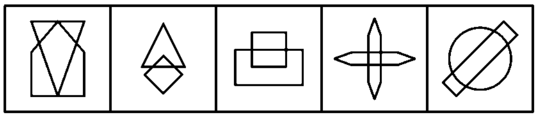


(a) (b) (c) (d) (e)

2. Problem Figures

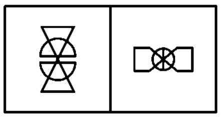


Answer Figures

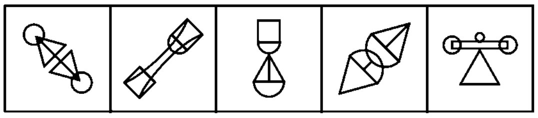


(a) (b) (c) (d) (e)

3. Problem Figures

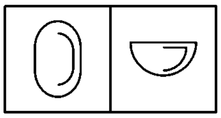


Answer Figures

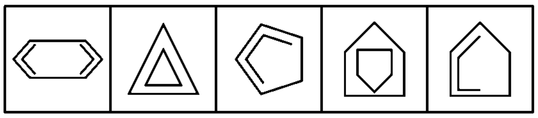


(a) (b) (c) (d) (e)

4. Problem Figures

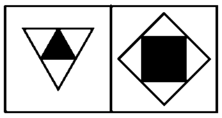


Answer Figures

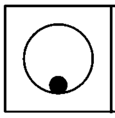
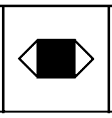
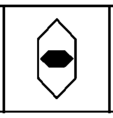
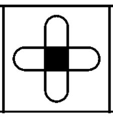
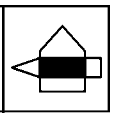


(a) (b) (c) (d) (e)

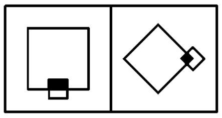
5. Problem Figures



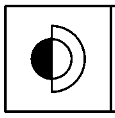
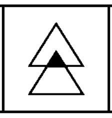
Answer Figures


(a)

(b)

(c)

(d)

(e)

6. Problem Figures



Answer Figures


(a)

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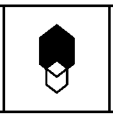
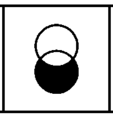
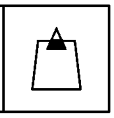
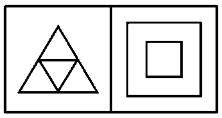
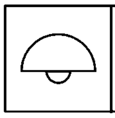
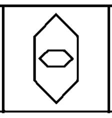

(c)

(d)

(e)

7. Problem Figures



Answer Figures


(a)

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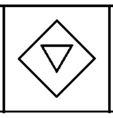
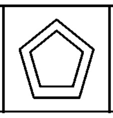

(c)

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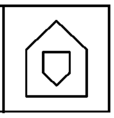
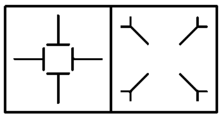
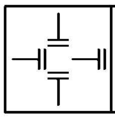
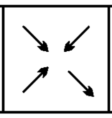

(e)

8. Problem Figures



Answer Figures


(a)

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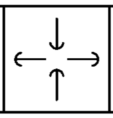
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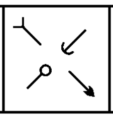
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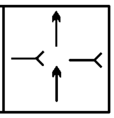
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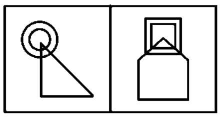
9. Problem Figures



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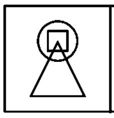
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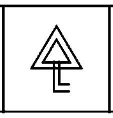
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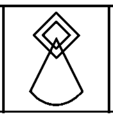
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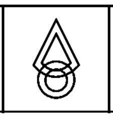
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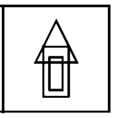
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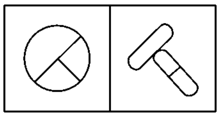

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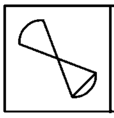
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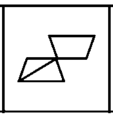
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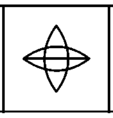
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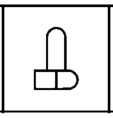
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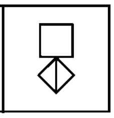
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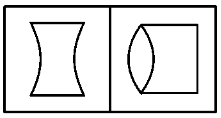

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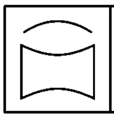
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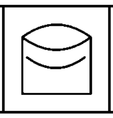
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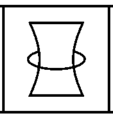
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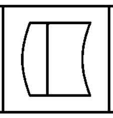
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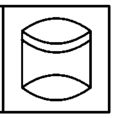
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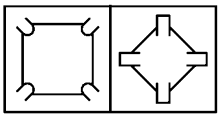

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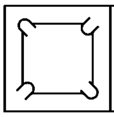
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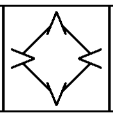
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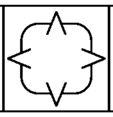
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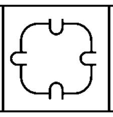
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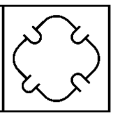
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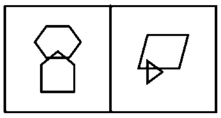
13. Problem Figures



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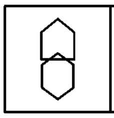
Answer Figures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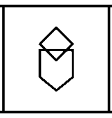
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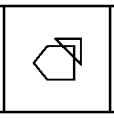
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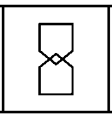
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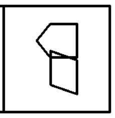
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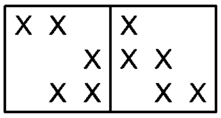
14. Problem Figures



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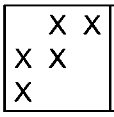
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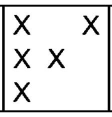
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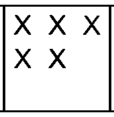
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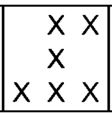
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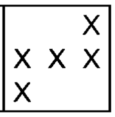
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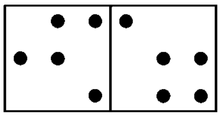

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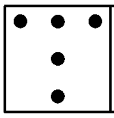
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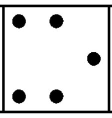
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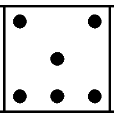
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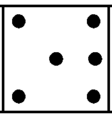
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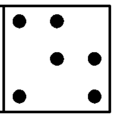
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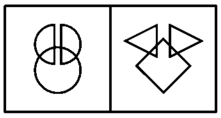
16. Problem Figures



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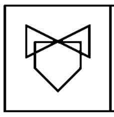
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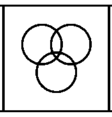
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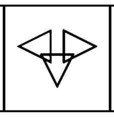
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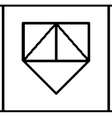
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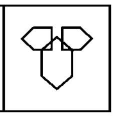
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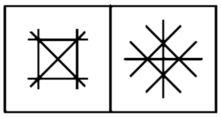
17. Problem Figures



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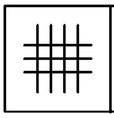
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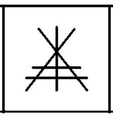
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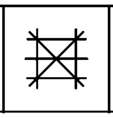
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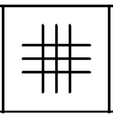
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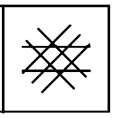
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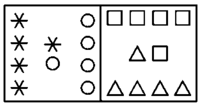
18. Problem Figures



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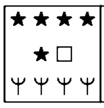
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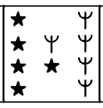
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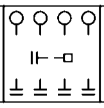
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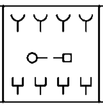
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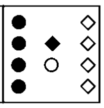
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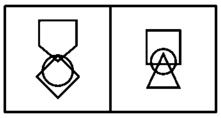
19. Problem Figures



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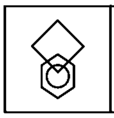
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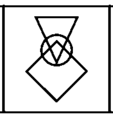
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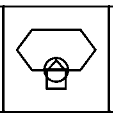
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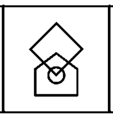
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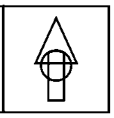
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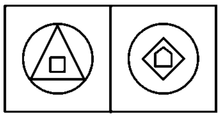
20. Problem Figures



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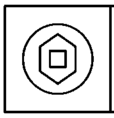
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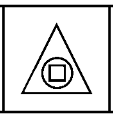
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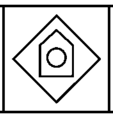
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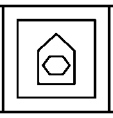
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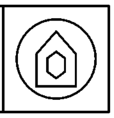
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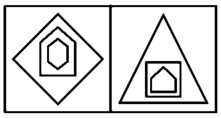
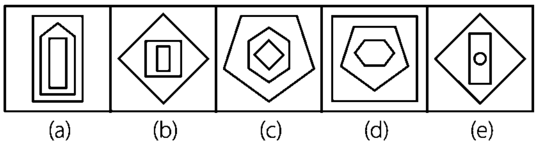
21. Problem Figures



Answer Figures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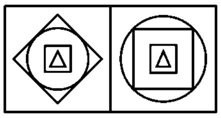
22. Problem Figures



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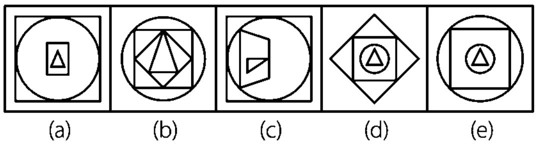
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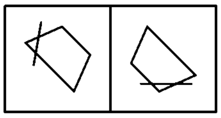

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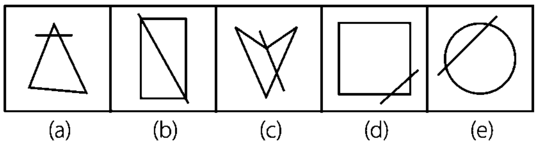
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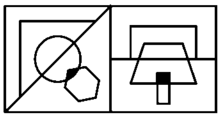

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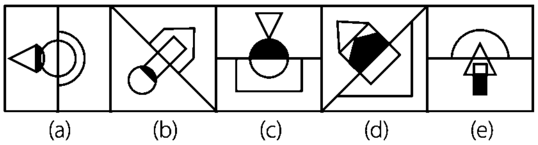
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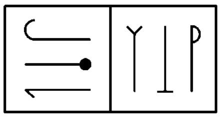

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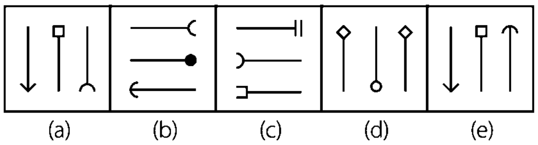
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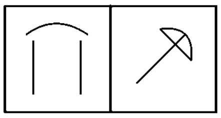
26. Problem Figures



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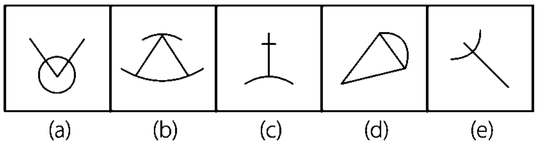
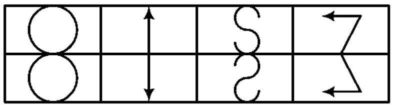

(a) (b) (c) (d) (e)

Directions (Q. Nos. 27-32) In following questions, set a four figures forming the problem figure and five other answer figures marked as (a), (b), (c), (d) and (e) is given. The four problem figure have certain common characteristic. Select a answer figure which possess the same characteristic.

27. Problem Figures



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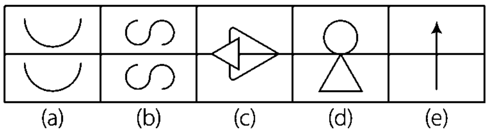
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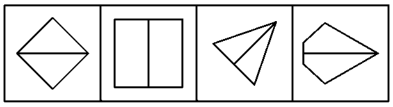
28. Problem Figures



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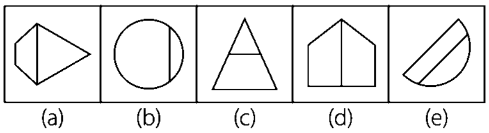
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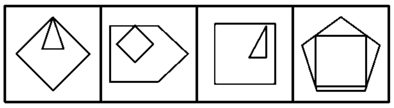
29. Problem Figures



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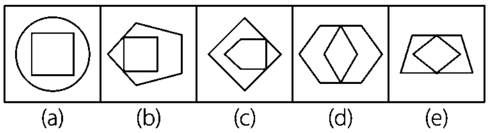
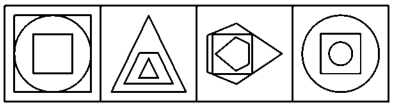


30. Problem Figures



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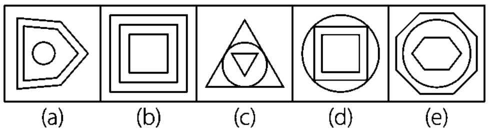
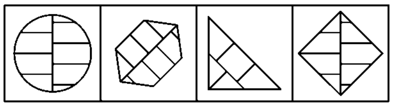
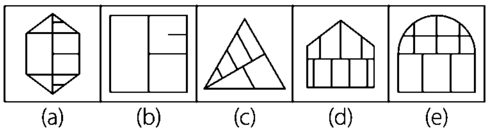


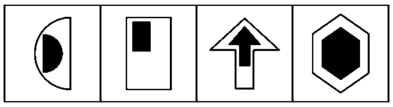
31. Problem Figures



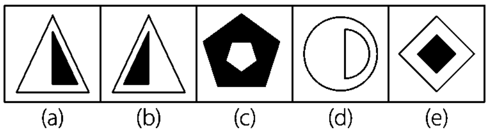
Answer Figures



32. Problem Figures



Answer Figures



Response & Interpretations (3.2)

1. (*c*) Two identical figures are attached with each other.

2. (*d*) Two identical figures intersect with each other.

3. (*a*) Two identical figures are connected with each other.

4. (*e*) The arc encloses the half portion of closed figure.

5. (*c*) The shaded portion in the middle of the figure identical to the outer figure.

6. (*b*) Two identical figures intersect each other in such a way that common portion of both the figures is shaded.

7. (*e*) The inner figure is the inverted form of the outer figure.

8. (*c*) Four identical line segments are placed in four different directions.

9. (*c*) Two concentric figures intersect with another different figure.

10. (*e*) Two identical figures are attached with each other in such a way that the lower figure is divided into two equal parts.

11. (*d*) The figure contains only two arcs.

12. (*c*) Four identical figures are arranged in a similar pattern.

13. (*e*) The lower figure has one side less than the upper figure.

14. (*a*) No row or column contains more than two crosses.

15. (*b*) The figure contains five dots, two are arranged in two rows and one dot in another row.

16. (*e*) The lower figure splits into two equal divisions and the two divisions appear on the upper portion of the figure.

17. (*d*) Six line segments intersect one another.

18. (*b*) Two types of symbols, equal in number, are arranged in a particular pattern.

19. (*c*) The lower figure has one side less than the upper figure with circle intersecting both the figures.

20. (*e*) There are two figures inside the circle with the number of sides one more than the other.

21. (*d*) Three figures are placed one into another in such a way that they get arranged in increasing number of their sides one by one.

22. (*d*) The figure contains two squares, one triangle and one circle.

23. (*d*) A line segment intersects two sides of a four sided figure.

24. (*b*) Three different figures are attached to the lines in such a way that common space between the middle figure and the last figure is shaded.

25. (*a*) In an arrangement of three line segments, which are different from each other middle one is in opposite direction to the rest of two.

26. (*c*) The figure contains two line segments and one curve.

27. (*c*) The figure on the bottom *i.e.,* below the horizontal line is the mirror image of the upper figure.

28. (*d*) Each of the figure is divided into exactly two halves of equal area.

29. (*b*) The inner figure has one less number of sides than outer figure.

30. (*c*) In each figure the inner most and outer most figures are similar to each other and middle figure is different from both figures.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-29) Out of the four/five given figures, three/four figures are similar in a certain way, one figure is not like the others. That means three/four figures form a group based on some common properties. Find out the figure which does not belong to the group i.e., which does not share the common features/characteristics with the other three/four figures.

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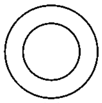
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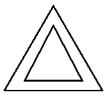
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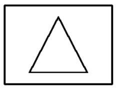
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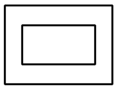
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[UP PSC 2013]

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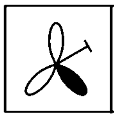
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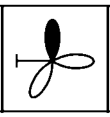
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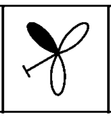
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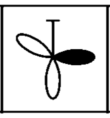
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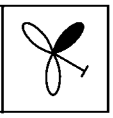
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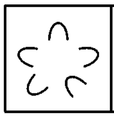
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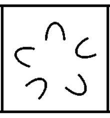
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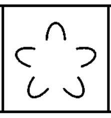
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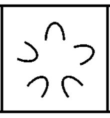
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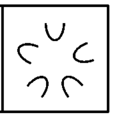
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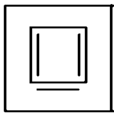
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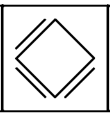
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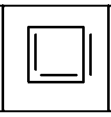
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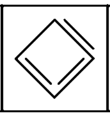
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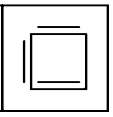
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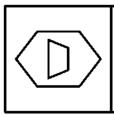
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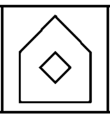
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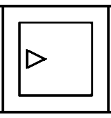
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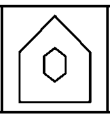
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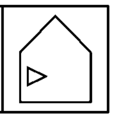
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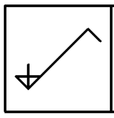
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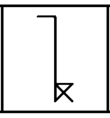
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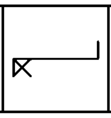
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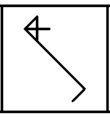
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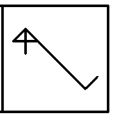
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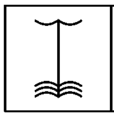
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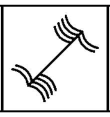
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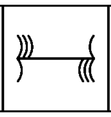
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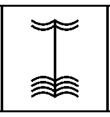
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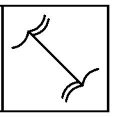
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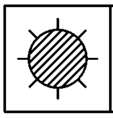
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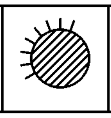
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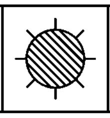
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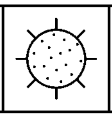
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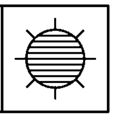
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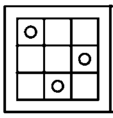
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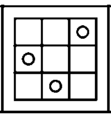
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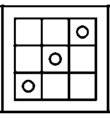
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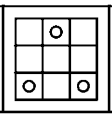
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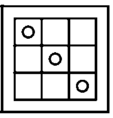
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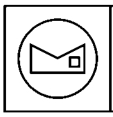
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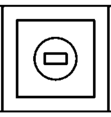
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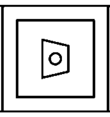
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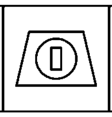
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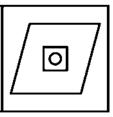
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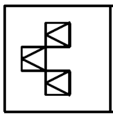
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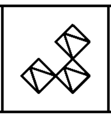
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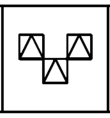
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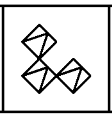
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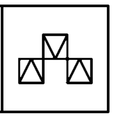
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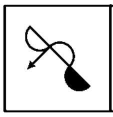
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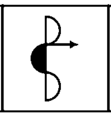
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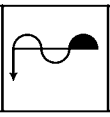
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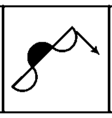
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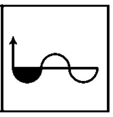
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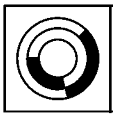
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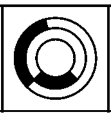
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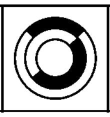
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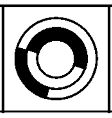
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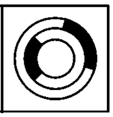
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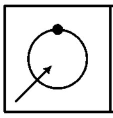
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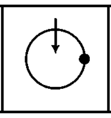
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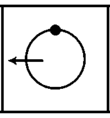
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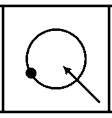
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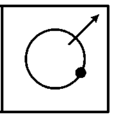
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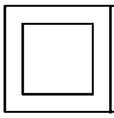
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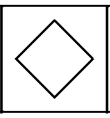
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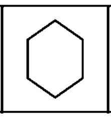
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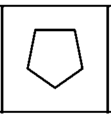
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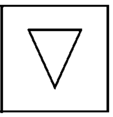
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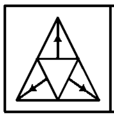
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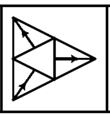
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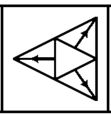
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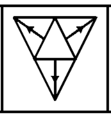
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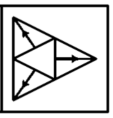
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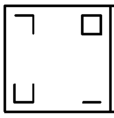
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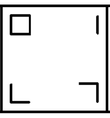
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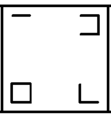
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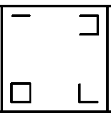
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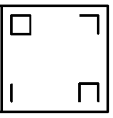
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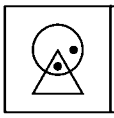
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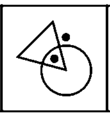
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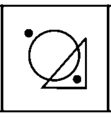
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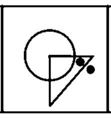
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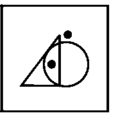
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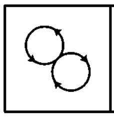
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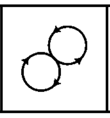
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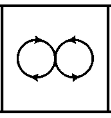
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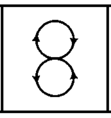
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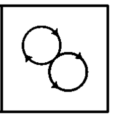
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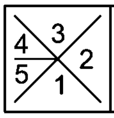

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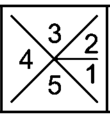

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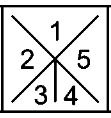

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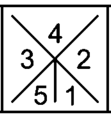

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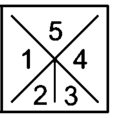

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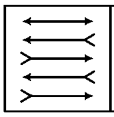
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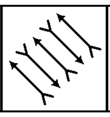
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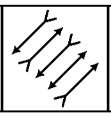
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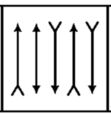
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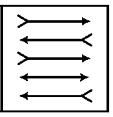
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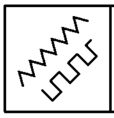
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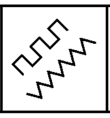
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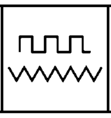
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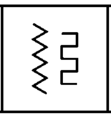
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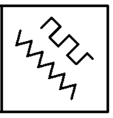
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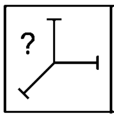

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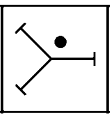
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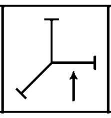
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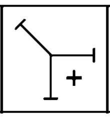

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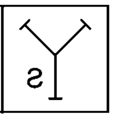
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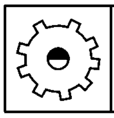
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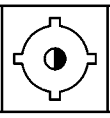
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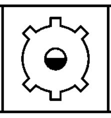
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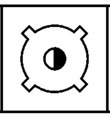
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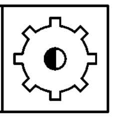
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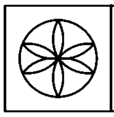
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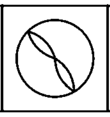
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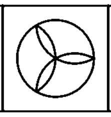
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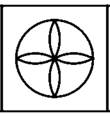
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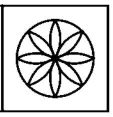
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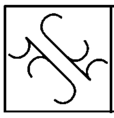
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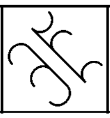
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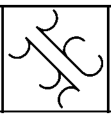
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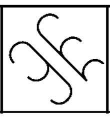
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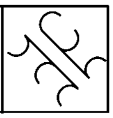
(e)

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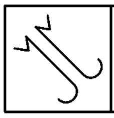
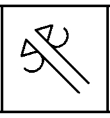

(a)

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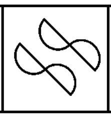
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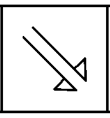
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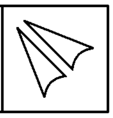
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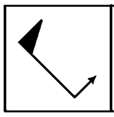
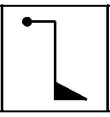

(a)

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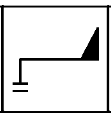
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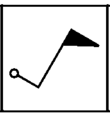
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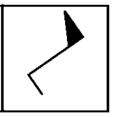
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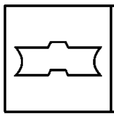
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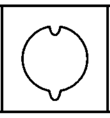
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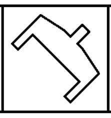
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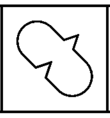
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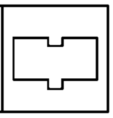
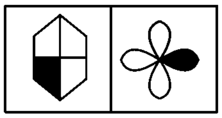
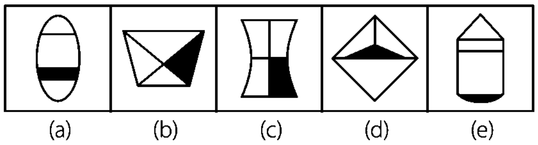

(e)

Directions (Q. Nos. 30-41) In each of the following questions, there are two problem figures followed by the answer figures marked by (a), (b), (c), (d) and (e). The two problem figures have some common characteristics. Select the answer figure which has the same characteristics.

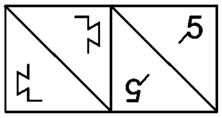
30. Problem Figures



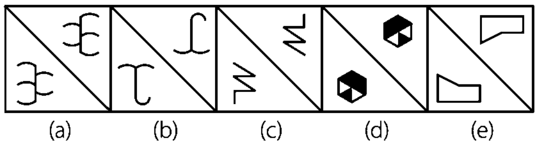
Answer Figures



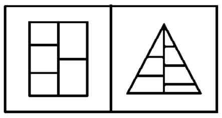
31. Problem Figures



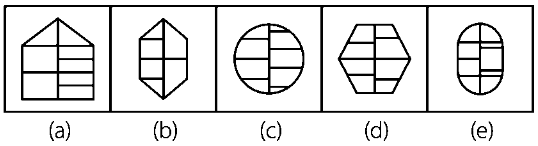
Answer Figures



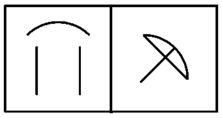
32. Problem Figures



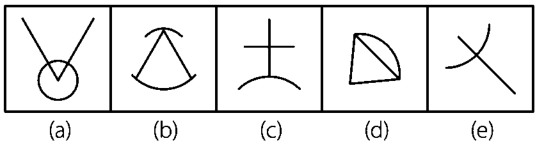
Answer Figures



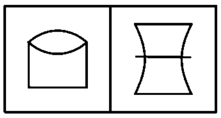
33. Problem Figures



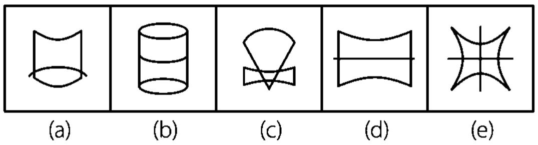
Answer Figures



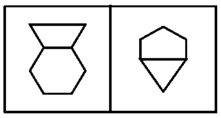
34. Problem Figures



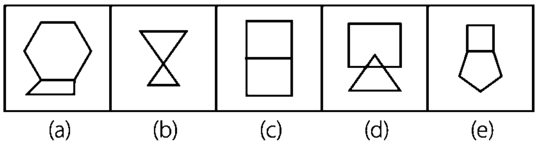
Answer Figures



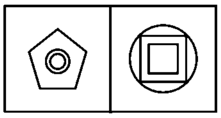
35. Problem Figures



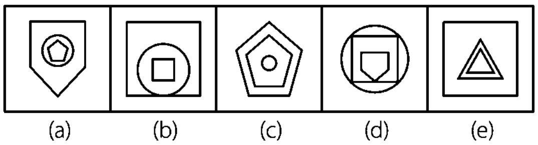
Answer Figures



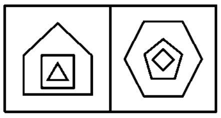
36. Problem Figures



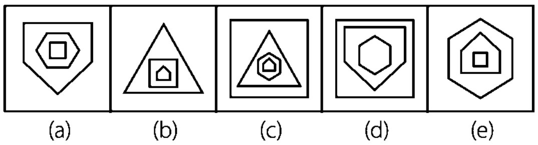
Answer Figures



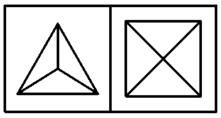
37. Problem Figures



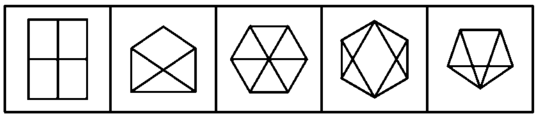
Answer Figures



38. Problem Figures

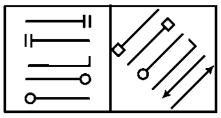


Answer Figures

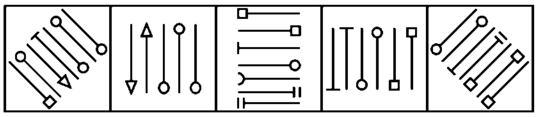


(a) (b) (c) (d) (e)

39. Problem Figures

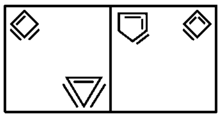


Answer Figures

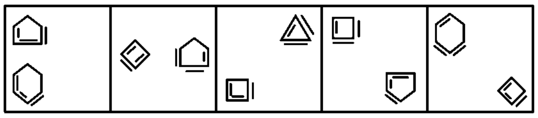


(a) (b) (c) (d) (e)

40. Problem Figures

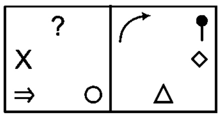


Answer Figures

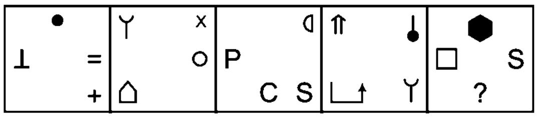


(a) (b) (c) (d) (e)

41. Problem Figures



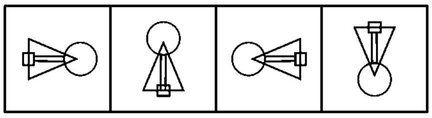
Answer Figures



(a) (b) (c) (d) (e)

Directions (Q. Nos. 42-68) Out of the four/five given figures, three/four figures are similar in a certain way, one figure is not like the other three/four figures. That means three/four figures form a group based on some common properties. Find out the figure which does not belong to the group i.e., which does not share the common features/characteristics with the other three/four figures.

42.



(a) (b) (c) (d)

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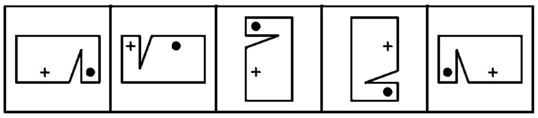
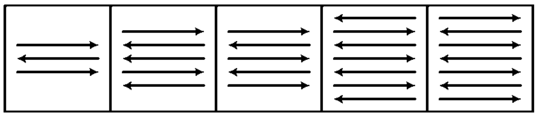
43.



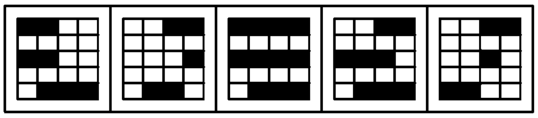
(a) (b) (c) (d) (e)

44.



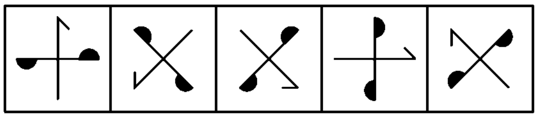
(a) (b) (c) (d) (e)

45.



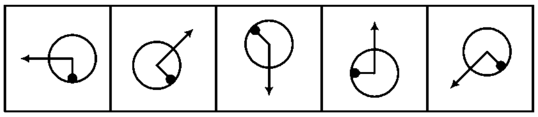
(a) (b) (c) (d) (e)

46.



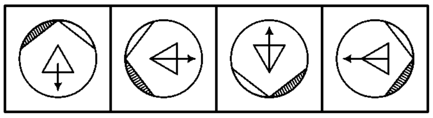
(a) (b) (c) (d) (e)

47.



(a) (b) (c) (d) (e)

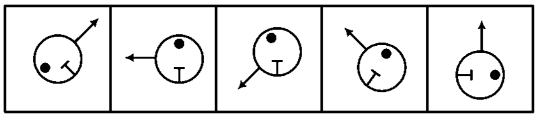
48.



(a) (b) (c) (d)

[SSC(10+2) 2013]

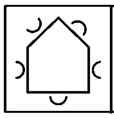
49.



(a) (b) (c) (d) (e)

Master Exercise

50.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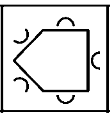
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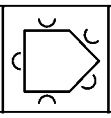
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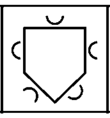
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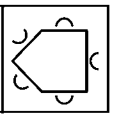
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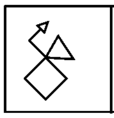
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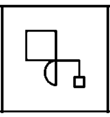
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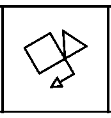
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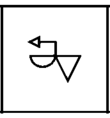
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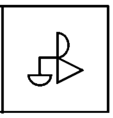
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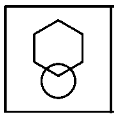
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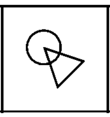
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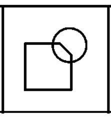
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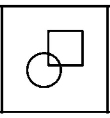
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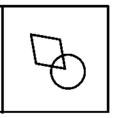
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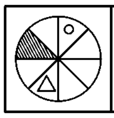
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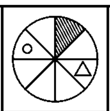
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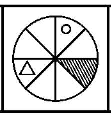
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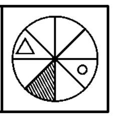
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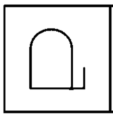
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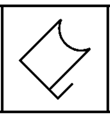
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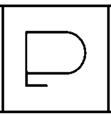
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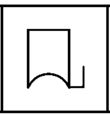
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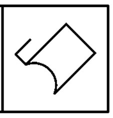
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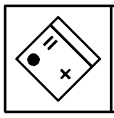
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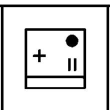
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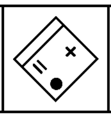
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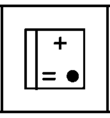
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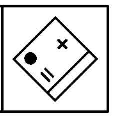
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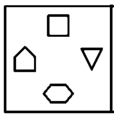
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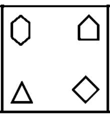
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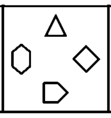
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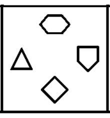
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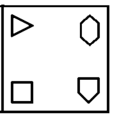
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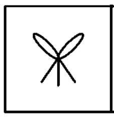
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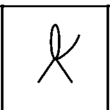
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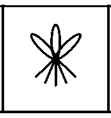
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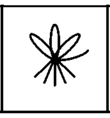
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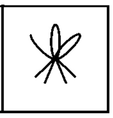
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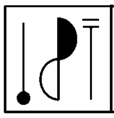
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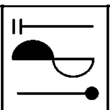
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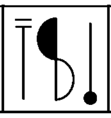
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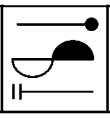
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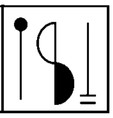
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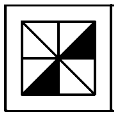
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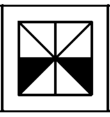
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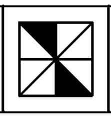
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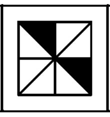
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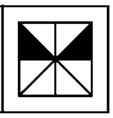
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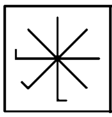
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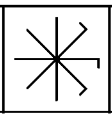
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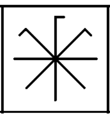
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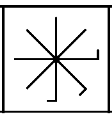
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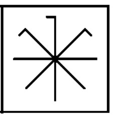
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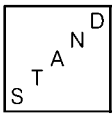

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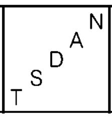

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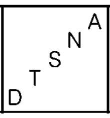

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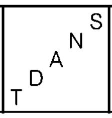

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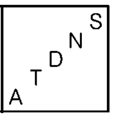

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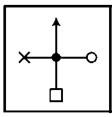
62.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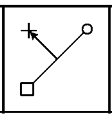
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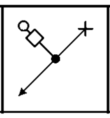
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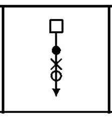
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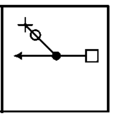
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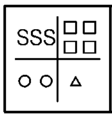
[IBPS (PO) 2012]

63.



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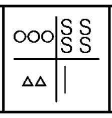

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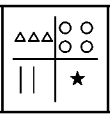
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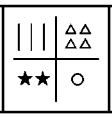
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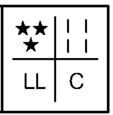

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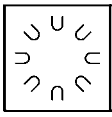
[IBPS (PO) 2012]

64.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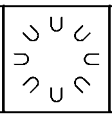
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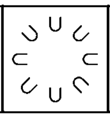
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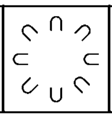
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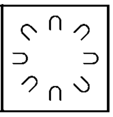
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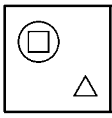
65.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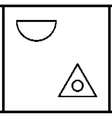
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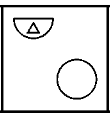
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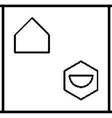
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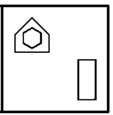
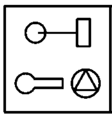

(e)

[IBPS (PO) 2012]

66.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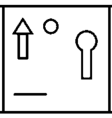
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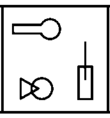
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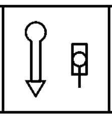
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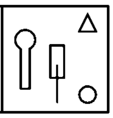
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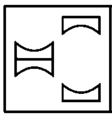
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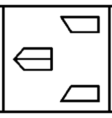
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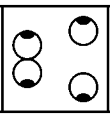
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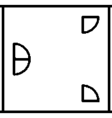
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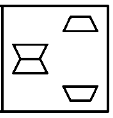
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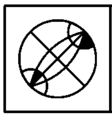
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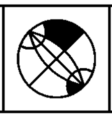
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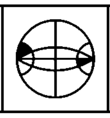
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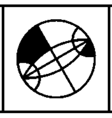
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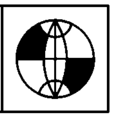
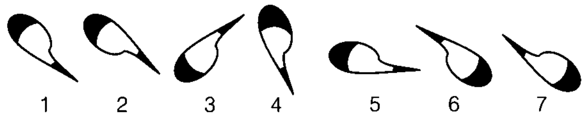

(e)

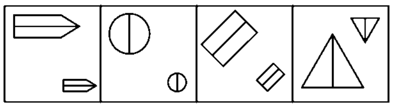
69. Find the odd pair of figure from the given figure by selecting the correct option.



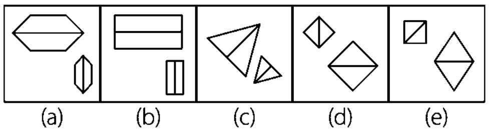
(a) 1, 2, 3 (b) 2, 3, 7 (c) 3, 7, 4 (d) 4, 1, 6

Directions (Q. Nos. 70-73) In each of the following question there are four problem figure followed by answer figure marked as (a), (b), (c), (d) and (e). The four problem figures have some common characteristics. Select the answer figure which has the same characteristics.

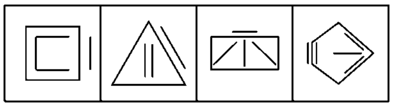
70. Problem Figures



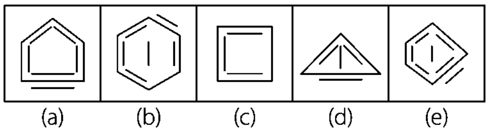
Answer Figures



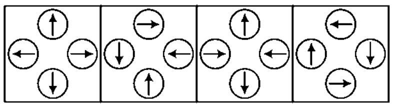
71. Problem Figures



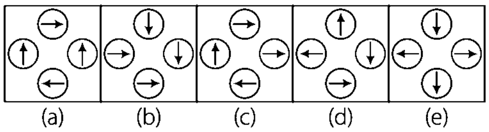
Answer Figures



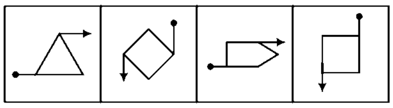
72. Problem Figures



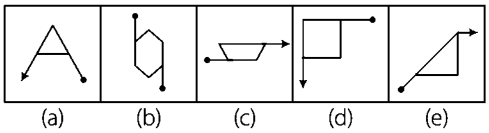
Answer Figures



73. Problem Figures

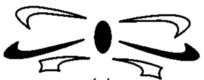


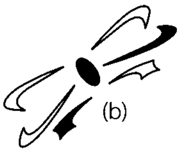
Answer Figures



Directions (Q. Nos. 74-86) In the following questions, a group of five figures containing signs and symbols, out of which four are similar in a certain way and one is different from the other. Find the odd group of figures which is different from other.

74.


(a)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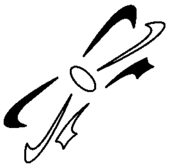
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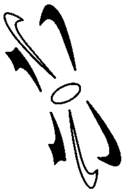
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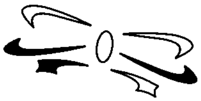
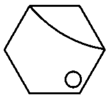

(e)

75.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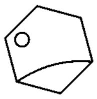
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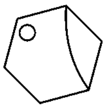
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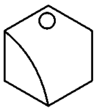
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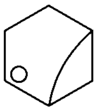

(e)

76. (a) ∏ e £ ℓ ▲ → ☺ ← © &

(b) ▲ ℓ ← ☺ → e Ж £ ¢ ¤ &

(c) £ ¢ Ж ℓ ® & → ☺ ← ▲

(d) e ¢ © ∏ £ § → ☺ ← ℓ

(e) ® £ & → ☺ ← e ∏ ¤ ©

77. (a) ¶ ® § ¥ £ ◀ ■
(b) ∑ ↕ ╬ ♫ ♣ ☺ ╟
(c) ◀ Ω ╬ ☺ ↔ Ψ ♫
(d) £ Ω ∑ ♠ Ψ ☺ ╬
(e) ¶ Ω Ψ ↔ ∏ Ω ■

78. (a) ☼ ♣ ♀ — ↕ ▲ =
(b) ▲ ↕ ♣ ♀ ☼ — =
(c) — ♣ ☼ ‖ ♀ ▲ =
(d) = ↕ ▲ ♀ ♣ — ☼
(e) ♣ ☼ ↕ = ▲ ♀ —

79. (a) & # ● ▲ ¥ ¶ ¿ €
(b) Ж © £ ¢ ¤ § ®
(c) € ¿ ¶ ¥ ▲ ● // &
(d) ▲ & ¢ § Ж © ¤
(e) ® § ¤ ¢ £ © Ж

80. (a) N ♣ ☼ — ☺ — ☼ ♣ N
(b) ♀ ♥ — ▲ — ♥ ♀
(c) ╦ ╪ ‖ = ‖ ╪ ╦
(d) ▲ = ‖ N ☼ N = ▲
(e) ☼ ♣ — ♀ — ♣ ☼

81. (a) ▼◀▲▼▶ (b) ▲◀▼▶▲
(c) ▶▼▲◀▼ (d) ▼◀▶▲▼
(e) ▲▶▼◀▲

82. (a) ♠ ♥ ♣ ♦ ♣
(b) ♠ ♥ ♣ ♠ ♦
(c) ♥ ♦ ♠ ♣ ♥
(d) ♠ ♥ ♣ ♦ ♣
(e) ♥ ♦ ♠ ♣ ♥

83. (a) ♫ √ Δ // ↑ √
(b) ○ □ ♂ ☺ ♪ →
(c) ┤ ┐ ┬ ┴ ╬ ╙
(d) ☺ # ♫ ┤ □ ╙
(e) √ → ┐ # □ Δ

84. (a) ♫ → # ◀ Δ ╬ ∑
(b) ╙ — ╬ ▼ # ∏ ↕
(c) ◀ ▼ — ■ █ ╬ =
(d) ↕ ∏ # ▼ ╬ — ╙
(e) ∑ ╬ Δ ◀ # → ♫

85. (a) = ∑ Δ ◀ ♫ # ╬ □ ■
(b) ◀ ♫ // ╬ □ ■ = ∑ Λ
(c) ♫ # ╬ □ ■ = Δ ∑ ◀
(d) ╬ □ ■ = ∑ Δ ◀ ♫ #
(e) □ ■ = ∑ Δ ◀ ♫ # ╬

86. (a) → ↓ ↓ ← → ↓ ←
(b) ↓ → ← → ← ↓ →
(c) ← ↓ → ← ↓ ← ↓
(d) → ← → ← ↓ ← ↓
(e) → ← ↓ ↓ ← ↑ ←

Response & Interpretations (Master Exercise)

1. (*c*) In all other figures except (c), the inner figure is similar to the outer figure.
2. (*e*) The figure (e) is different from other figures because all other figures can be obtained by rotating one another.
3. (*c*) Only in figure (c), all the curves are positioned inside.
4. (*b*) Only in figure (b), all the line segments are outside the square.
5. (*d*) In all the other figures, the inner figure has less sides than that of the outer figure.
6. (*b*) Only in figure (b), inclination of the triangle is different.
7. (*e*) Only in figure (e), number of pairs of curves on either side of line is odd, whereas in all other figures, it is even.
8. (*b*) In all the other figures, except figure (b), lines outside the circle are equidistant from one another.
9. (*d*) In all the other figures, every row has only one circle inside it.
10. (*a*) In all the other figures, the circle occupies either middle or innermost position.
11. (*e*) In all the figures, all V's inside the squares are in the same direction.
12. (*a*) In all other figures, shaded portion is in the opposite direction to the arrow.
13. (*e*) In all other figures, shaded portions of the circles are attached with each other.
14. (*a*) In all other figures, circle and arrow on the circumference of the circle are equidistant from each other.
15. (*a*) All other figures are based on the angled portion of the figures.

16. (*b*) In all other figures, all the arrows inside the figure are directed outside.

17. (*b*) All other figures contain different figures with one, two, three and four sides. Figure (b) contains two figures of two sides each.

18. (*a*) In all other figures, one dot is outside the figure and one is inside.

19. (*e*) In all the other figures, arrows on the circumference of both the circles are in opposite directions.

20. (*d*) In all other figures, all the numbers from 1 to 5 are in a serial order.

21. (*b*) In figure (b), the arrow of the design (↔) is missing which is present in all other figures.

22. (*e*) In all other figures, number of line segments in upper and lower figures are the same.

23. (*d*) In all other figures, the lines perpendicular to each other do not have any sign in between them.

24. (*a*) In all other figures, the wheel has even number of teeth.

25. (c) All other figures, except figure (c), have even number of leaves.

26. (*d*) Only in the figure (d), arcs on one side of the lines have all the curves in the same direction.

27. (c) In all other figures, both the figures are inverted image of each other.

28. (*a*) In all other figures, designs at the two ends of the line segment are in opposite directions.

29. (c) All other figures are similar in such a way that pressed and inflated portion of each of the figures are identical.

30. (c) One ofthe equal portions/sections of the figure is shaded.

31. (c) One of the two figures is obtained by rotating the other through 180°.

32. (c) None of the lines on the either side of the vertical line inside the figure coincide with one another.

33. (c) The figure contains two line segments and one curve.

34. (*d*) The figure contains three line segments and two curves.

35. (*a*) The difference between number of sides of two figures touching each other is two.

36. (*e*) The innermost and middle figures are identical to each other and the outer figure is different.

37. (*e*) All the three figures are arranged in increasing order of their number of sides.

38. (c) The figure is divided into the number of equal divisions which is equivalent to number of the line segments passing through vertices and coinciding at centre.

39. (c) The figure contains two identical pairs of pins, each one at different ends and the rest pins are non-identical.

40. (*a*) The figure contains two geometrical figures with either two line inside and one outside it or two lines outside and one inside it. This arrangement of lines is same in both the figures.

41. (c) Four different symbols are arranged in such a way that two are placed at adjacent corners and other two are placed in the middle of two different sides.

42. (*b*) Only in figure (b), pipe is present inside the square while it is absent in rest of the figures.

43. (*b*) Only in figure (b), placement of symbols (•) and (+) is different from rest of the figures.

44. (*b*) In all other figures, all the arrows are arranged in such a way that every second arrow is opposite to the previous one.

45. (*d*) In all other figures, the number of shaded blocks inside the square is odd. In figure (d), it is even.

46. (*b*) In all the other figures, one shaded semicircle attached to the line and the small line segment attached to the other line, face each other.

47. (c) In all the other figures, both arrow and pin are perpendicular to each other.

48. (*d*) Only in figure (d), the arrow is originating from one of the sides of the triangle and not from any of the vertices. And it is only in (d) that all vertices all away from the point of intersection of the two chords.

49. (*a*) In all the other figures, except figure (a), the dot inside the circle is in clockwise direction to the arrow.

50. (*e*) In all the other figures, two arcs are positioned inside and three arcs are positioned outside.

51. (*a*) In all other figures, the figure attached with the bent line is similar to the figure that lies opposite to it.

52. (c) In figure (c), circle intersects or covers three sides of the other figure. In all other figures, it intersects or covers two sides of the other figure.

53. (c) In all the figures, except (c), there is a triangle and then a black portion and then a portion having lines after that another blank portion and after that a circle.

54. (*e*) In all other figures, if the main figure is placed on the base formed by the straight line, the line segment attached to the figure comes on the right hand side.

55. (*e*) All other figures are same because if these figures are placed in such a way that double lines become the base of the figures, then all the figures look identical.

56. (c) In all other figures, all the four figures are arranged in anti-clockwise direction in ascending order of their sides.

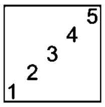
57. (*d*) In all other figures, the number of line segments at the lower portion of the figure is one less than the number of arcs at the upper portion of the figure.

58. (*d*) In all other figures, shaded portion of the central figure and sign (=) are on the same side. In figure (d), these two are in the opposite direction.

59. (c) In all other figures both the shaded portions have two and four blank portions between them.

60. (*e*) In all the other figures, two bent line segments face clockwise direction and single bent line faces anti-clockwise direction. In figure (e), the case is just opposite.

61. (*d*) If we denote the positions of the elements as,



then T oscillates between positions 1 and 2 and N between 4 and 5. Both S and A move diagonally upwards and D moves from position 5 to 3 and from 3 to 1 and then backwards.

Only figure (d) does not obey this pattern.

62. (*e*) In first step the arrow (↑) and circle (○) attached to the line moves 45°anticlockwise and other two symbol *i.e.,* cross (×) and square moves 45° clockwise. Now, on moving from fig (b) to fig (c) *i.e.,* second step the arrow and circle moves 90° anticlockwise and cross and square move 90° clockwise in third step *i.e.,* moving from fig (c) to fig (d) the arrow and square moves 45° anticlockwise and clockwise, respectively and circle and cross moves 135° anti-clockwise and clockwise respectively but this rule further is not followed in next figure, so it the odd figure.

63. (*d*) If we mark the four places as

3 4
2 1

then in each step element moves one step clockwise and increases by one but at the place of 1, a new element is introduced. This rule is not followed in option (d).

64. (*e*) In consecutive figure the U-shaped element gets inverted in order as 1 in first step, 2 in second step, 3 in third and so on this rule gets rotated in figure (e), so it is the odd figure among the options.

65. (*d*) From fig (a) to fig (b) the outer element of upper figure reduces in size and becomes the inner figure for the lower figure and the inner figure of upper figure is inter changed by new figure. Now, when we move from fig (b) to fig (c) reverse procedure is followed.

66. (*a*) Figure (a) does not belong to the group as all the other figures contain same elements.

67. (*c*) In all other figures, if both the figures on right hand side are first inverted and then joined together, the figure on left hand side is obtained.

68. (*e*) In figure (e), both the shaded designs have the common base *i.e.,* the middle line.

69. (*b*) Figure 2, 3 and 7 move clockwise direction where as figure number 1, 4, 5 and 6 move anti-clockwise direction.

70. (*c*) The central lines in each of the two figures are parallel to each other. The same property is displayed by option (c).

71. (*b*) In each figure the number of lines inside the figure is one less than the number of sides in the figure also there a line out side each figure or another way of classification is that the number of lines present is equal to the number of sides of figure.

72. (*d*) All the arrows are pointing in four different directions.

73. (*c*) The arrow and the pin attached to the central figure are pointing in the opposite directions.

74. (*b*) Figure (a) is same as figure (d) with black white reversal of regions and figure (c) is same as figure (e) with black white reversal of regions, so the odd man out is figure (b).

75. (*c*) All except figure (c) are rotated forms of the same figure.

76. (*b*) In all options except (b) the arrows are pointing towards the face sign.

77. (*e*) All option except (e) contains a set of different symbols, where as in option (e) (Ω) symbol appears twice *i.e.,* repeated.

78. (*c*) All option except (c) contains the set of same seven symbols.

79. (*d*) Option (b) is same as option (e) arranged is reverse order and option (a) is same as option (c) arranged in reverse order, so the odd man out is option (d).

80. (*d*) Except option (d) the rest are palindromic *i.e.,* they read the same backwards and forward.

81. (*d*) Option (a) contains the same symbol as option (c) but in reverse order. Similarly option (b) has same symbol as option (e) in reverser order, so the odd man out is option (d).

82. (*b*) Symbols in option (a) is same as in option (d) and symbols in option (c) is same as in option (e).

83. (*a*) Only option (a) contains a repetitive symbol *i.e.,* $\sqrt{\ }$.

84. (*c*) Symbols in option (a) are in reverse order of symbols in option (e) and symbols in option (b) are in reverse order of symbols in option (d).

85. (*c*) All option except option (c) contain same symbols in same order although starting with different symbol but in option (c) the sequence of symbol ΣΔ is reversed to ΔΣ.

86. (*e*) Option (e) is only option which contains an arrow pointing in upward direction.

4

Counting of Figures

Counting of Figures can be explained as the realisation of simple geometrical plane figures from a complex figure.

Different types of questions covered in this chapter are as follows

- Counting of Straight Lines and Triangles
- Counting of Quadrilaterals and Polygons
- Counting of Circles and Colours

This section of non-verbal reasoning is designed to test the analytical ability of the candidate. The figures which are asked for counting can be a straight line, triangle, square, rectangle, polygon etc. To find the accurate answer for these question, firstly, a candidate needs to find the required figures formed by individual section of the given figure, then the figure formed by combination of two figures and so on.

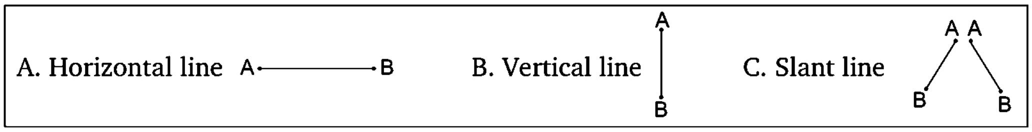
Counting methods of various geometrical figures are covered under different types, which are discussed as below

Type 1 Counting of Straight Lines and Triangles

In this type of questions, a candidate is required to find out the number of straight lines in the given figure.

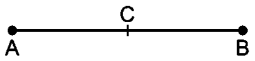
A **straight line** is a set of points that extends endlessly in both the directions.

Some types of straight lines are defined below



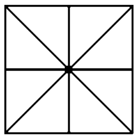
Counting Method of Straight Line

Let us consider a line (AB) *given*



Then, on counting, it will be counted as one line *i.e.,* AB and not as a two straight lines AC and CB.

***Ex* 1** How many straight lines are there in the figure given below?



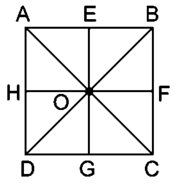
(a) 14 (b) 8 (c) 4 (d) 9

Sol. (*b*) Horizontal lines = AB + HF + DC = 3

Vertical lines = AD + EG + BC = 3

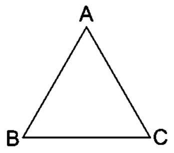
Slant lines = AC + BD = 2

∴ Total lines = 3 + 3 + 2 = 8



Counting of Triangles

In this type of question, a candidate is required to find the number of triangles in the given figure.
A **triangle** is a closed figure bounded by three side. Here, ABC is a triangle.

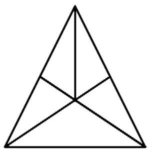


Counting Method of Triangle

- Smallest triangles are counted first.
- At the second step those triangles are counted which are formed with the two triangles and further counting goes on in the same way *i.e.,* triangles formed with three, four, ... triangles are counted one after another.
- Largest triangle is counted at the final step.

➘ Counting can also be done in reverse order *i.e.*, counting in order of largest to smallest.

***Ex* 2** How many triangles are there in the following figure?



(a) 11 (b) 16 (c) 14 (d) 12

Sol. (*d*) Smallest triangles = ΔAOD, ΔAOE, ΔCOE, ΔBOD, ΔBOC = 5

Triangles formed with two triangles

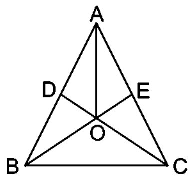
= ΔAOC (ΔAOE + ΔCOE), ΔAOB (ΔAOD + ΔBOD), ΔBCD (ΔBOD + ΔBOC), ΔBCE (ΔBOC + ΔCOE) = 4

Triangles formed with three triangles

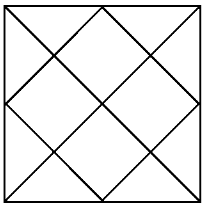
= ΔACD (ΔAOD + ΔAOE + ΔCOE), ΔABE (ΔBOD + ΔAOD + ΔAOE) = 2

Largest triangle = ΔABC = 1

∴ Total triangles = 5 + 4 + 2 + 1 = 12



***Ex* 3** How many triangles are there in the figure given below?



(a) 20 (b) 27 (c) 18 (d) 29

Sol. (*a*) According to the questions,

Smallest triangles are ABI, BCJ, CDJ, DEK, EFK, FGL, GHL, HAI = 8

Small triangles formed with two triangles

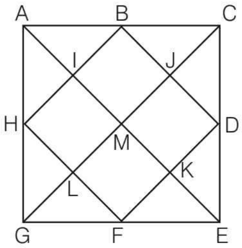
BCD, DEF, FGH, HAB = 4

Large triangles formed with two triangles

ACM, CEM, EGM, GAM = 4

Largest triangles ACE, AGE, GAC, GEC = 4

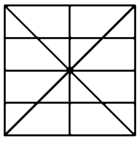
∴ Total triangles = 8 + 4 + 4 + 4 = 20



Practice Corner **4.1**

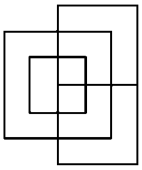
Build your Confidence...

1. How many straight lines are there in the following figure? **[UP B.Ed. 2011]**



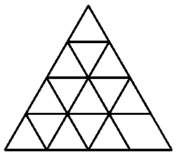
(a) 5 (b) 10 (c) 9 (d) 8

2. How many straight lines are there in the figure given below? **[UP B.Ed. 2009]**



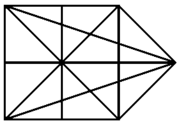
(a) 12 (b) 13 (c) 14 (d) 15

3. How many straight lines are there in the following figure? **[RRB (ASM) 2007]**



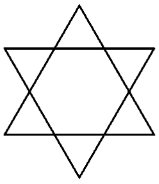
(a) 9 (b) 11 (c) 15 (d) 48

4. How many straight lines are there in the following figure? **[SSC (CPO) 2009]**



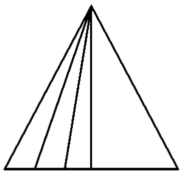
(a) 10 (b) 12 (c) 13 (d) 17

5. Count the number of triangles in the following figure?



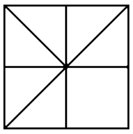
(a) 6 (b) 7 (c) 8 (d) 9

6. How many triangles are there in the following figure?



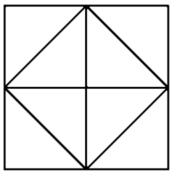
(a) 5 (b) 12
(c) 9 (d) 10

7. How many triangles are there in the figure given below? **[SSC (CGL) 2013]**



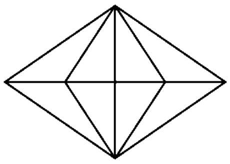
(a) 8 (b) 10 (c) 12 (d) 11

8. How many triangles are there in the figure given below?



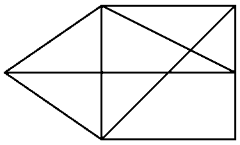
(a) 4 (b) 12 (c) 16 (d) 10

9. How many triangles are there in the following figure?



(a) 10 (b) 24 (c) 22 (d) 20

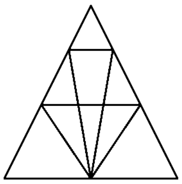
10. How many triangles are there in the following figure?



(a) 12 (b) 14

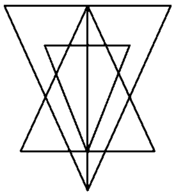
(c) 15 (d) 13

11. How many triangles are there in the following figure?



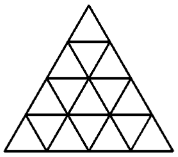
(a) 18 (b) 16 (c) 22 (d) 26

12. How many triangles are there in the following figure?



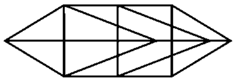
(a) 27 (b) 23 (c) 21 (d) 25

13. Find out the number of triangles in the given pattern. **[SSC (Multitasking) 2013]**



(a) 23 (b) 26 (c) 28 (d) 27

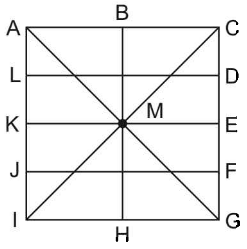
14. Count the number of triangles in the figure given below.



(a) 15 (b) 19 (c) 22 (d) 24

Response & Interpretations **(4.1)**

1. (*b*)



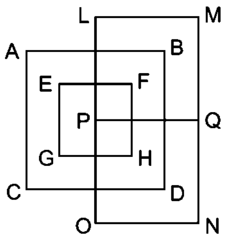
Horizontal lines = AC, LD, KE, JF, IG = 5

Vertical lines = AI, BH, CG = 3

Slant lines = AG, IC = 2

∴ Total number of straight lines = 5 + 3 + 2 = 10

2. (*b*)



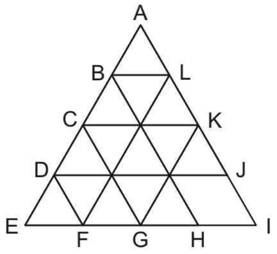
Horizontal lines = AB, EF, GH, CD, LM, PQ, ON = 7

Vertical lines = AC, EG, FH, BD, LO, MN = 6

∴ Total number of straight lines = 7 + 6

= 13

3. (*b*)

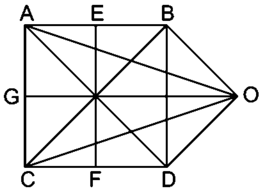


Horizontal lines = BL, CK, DJ, EI = 4

Slant lines = AE, LF, KG, AI, BH, CG, DF = 7

∴ Total number of straight lines = 4 + 7 = 11

4. (*b*)



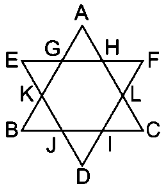
Horizontal lines = AB, GO, CD = 3

Vertical lines = AC, EF, BD = 3

Slant lines = BO, DO, AO, CO, AD, BC = 6

∴ Total number of lines = 3 + 3 + 6 = 12

5. (*c*) The figure in question looks like as shown below after labelling it.

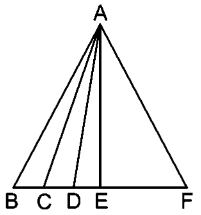


Smallest triangles = ΔGAH, ΔHFL, ΔLCI, ΔIDJ, ΔJBK, ΔKEG = 6

Largest triangles = ΔABC, ΔEFD = 2

∴ Total triangles = 6 + 2 = 8

6. (*d*)



Smallest triangles = ΔABC, ΔACD, ΔADE = 3

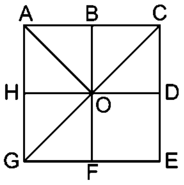
Triangles formed with two triangles = ΔABD, ΔACE, ΔADF = 3

Triangles formed with three triangles = ΔABE, ΔACF = 2

Largest triangles = ΔAEF, ΔABF = 2

∴ Total triangles = 3 + 3 + 2 + 2 = 10

7. (*b*)



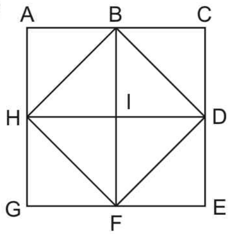
Smallest triangles = ΔBOC, ΔCOD, ΔFOG, ΔGOH, ΔHOA, ΔAOB = 6

Triangles formed with two small triangles = ΔAOG, ΔAOC = 2

Largest triangles = ΔACG, ΔEGC = 2

∴ Total triangles = 6 + 2 + 2 = 10

8. (*b*)

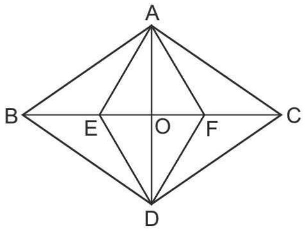


Smallest triangles = ΔABH, ΔBHI, ΔBID, ΔBDC, ΔDIF, ΔDEF, ΔFGH, ΔHIF = 8

Triangles formed with two triangles = Δ FHB, Δ FBD, ΔBDH, ΔDFH = 4

∴ Total number of triangles = 8 + 4 = 12

9. (*b*) Given figure can be labelled as follows



In the above figure, triangles formed by single units are ΔABE, ΔAEO, ΔAOF, ΔAFC, ΔDEB, ΔDOE, ΔDFO and ΔDCF *i.e.,* 8 triangles.

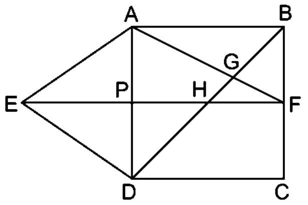
Triangles formed by combining 2 units are ΔABO, ΔAEF, ΔAOC, ΔBOD, ΔDEF, ΔDOC, ΔAED and ΔADF *i.e.,* 8 triangles.

Triangles formed by combining 3 units are ΔABF, ΔAEC, ΔBDF and ΔEDC *i.e.,* 4 triangles.

Triangles formed by combining 4 units are ΔABC, ΔBCD, ΔABD and ΔACD *i.e.,* 4 triangles.

So, total number of triangles = 8 + 8 + 4 + 4 = 24

10. (*c*) The figure in question has been labelled as shown in the following figure



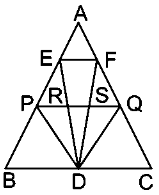
Smallest triangles = ΔEAP, ΔEDP, ΔAGB, ΔHFG, ΔGBF, ΔPHD = 6

Triangles formed with two triangles = ΔEAD, ΔAGD, ΔBHF, ΔEHD, ΔAPF, ΔABF = 6

Largest triangles = ΔBDC, ΔAEF, ΔABD = 3

∴ Total triangles = 6 + 6 + 3 = 15

11. (*a*) The figure in question may be labeled as shown in the following figure



Smallest triangles = ΔAEF, ΔEPR, ΔFSQ, ΔPRD, ΔRSD, ΔSQD = 6

Single triangles = ΔPBD, ΔQDC, ΔEFD = 3

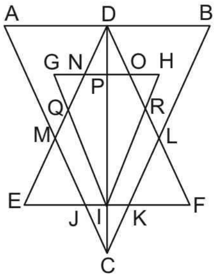
Triangles formed with two trinagles = ΔPSD, ΔRQD, ΔFDQ, ΔEDP = 4

Triangles formed with three or four triangles = ΔAPQ, ΔFDC, ΔBDE, ΔPQD = 4

Largest triangle = ΔABC = 1

∴Total triangles = 6 + 3 + 4 + 4 + 1 = 18

12. (*d*) The figure in question may be marked at different points as shown in the following figure



Smallest triangles = ΔNGQ, ΔOHR, ΔPDO, ΔNDP, Δ JIC, ΔICK = 6

Single triangles = ΔEMJ, ΔKLF, ΔRIF, ΔEQI, ΔPHI, ΔPGI = 6

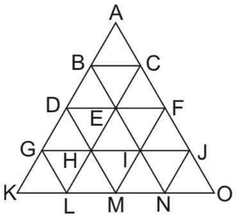
Triangle formed with two triangles = ΔADM, ΔDBL, ΔDNO, ΔDQI, ΔDRI, ΔCJK, ΔGHI, ΔDEI, ΔDIF = 9

Triangles formed with three triangles = ΔADC, ΔDBC = 2

Largest triangles = ΔABC, ΔEDF = 2

∴ Total triangles = 6 + 6 + 9 + 2 + 2 = 25

13. (*d*) There are total 27 triangles in the given figure.



From this figure it is clear that,

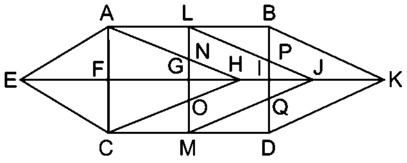
Triangles formed by single units = ΔABC, ΔBDE, ΔBCE, ΔCEF, ΔDGH, ΔDHE, ΔHEI, ΔEIF, ΔFIJ, ΔGKL, ΔGLH, ΔLHM, ΔHMI, ΔMIN, ΔINJ and ΔNJO *i.e.,* 16 triangles.

Triangles formed by combining four triangles are ΔADF, ΔBGI, ΔCHJ, ΔDKM, ΔLEN, ΔMFO and ΔDFM *i.e.,* 7 triangles.

Triangle formed by combining 9 triangles are ΔAGJ, ΔBKN and ΔCLO *i.e.,* 3 triangles. One triangle ΔAKO formed by complete figure.

So, total number of triangles = 16 + 7 + 3 + 1 = 27

14. (*d*) The figure may be marked as shown in the following diagram



The triangles in the figures are as follows

Smallest triangles = ΔAFE, ΔEFC, ΔALN, ΔCOM, ΔNHG, ΔGHO, ΔLBP, ΔMQD, ΔIPJ, ΔIJQ = 10

Single triangles = ΔAFH, ΔCFH, ΔBIK, ΔDIK = 4

Triangles formed with two small triangles = ΔAEC, ΔNOH, ΔGJM, ΔPQJ, ΔECH, ΔAEH, ΔLJG = 7

Triangles formed with three or four small triangles = ΔAHC, ΔLMJ, ΔBDK = 3

∴ Total triangles = 10 + 4 + 7 + 3 = 24

Type 2 Counting of Quadrilaterals and Polygons

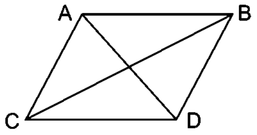
A quadrilateral is a closed figure formed by joining four straight lines.

Different types of quadrilaterals are discussed as under

A. Parallelogram

It has

- Four sides.
- Two unequal diagonals *i.e.,* AD and BC
- Opposite sides equal *i.e.,* AB = CD and AC = BD.
- Opposite angles equal *i.e.,* ∠ACD, ∠ABD and ∠BAC = ∠BDC.

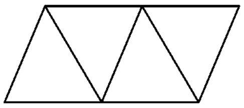


Counting Method of Parallelogram

- Smallest parallelograms are counted first.
- At the second step those parallelogram are counted which are bigger than the smallest ones. Further, steps go on in the same way.

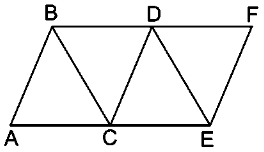
➘ Counting can also be done by supposing different bases in a figure.

Ex **4** How many parallelograms are there in the figure given below?



(a) 5 (b) 8 (c) 4 (d) 6

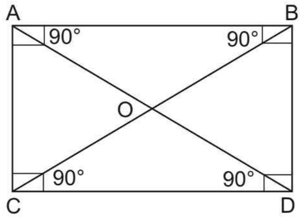
Sol. (*c*) Supposing AB as a base,
Number of parallelograms = ▱ABDC and ▱ABFE= 2
Supposing CE as a base,
Number of parallelogram =▱CBDE = 1
Supposing CD as a base,
Number of parallelogram =▱CDFE = 1
∴ Total number of parallelograms = 2 + 1 + 1= 4



B. Rectangle

It has

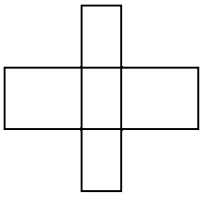
- Four sides
- Opposite sides are equal *i.e.,* AB = CD and AC = BD
- Equal diagonals *i.e.,* AD = BC.
- Each of the four angles is equal to 90° *i.e.,* $\angle CAB = \angle ABD = \angle BDC = \angle DCA = 90°$.



Counting Method of Rectangle

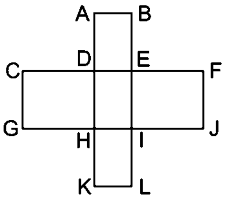
- Smallest rectangles are counted first.
- At the second step those rectangles are counted which are formed with 2 rectangles and further counting goes on in the same way *i. e.,* rectangles formed with 3, 4, ... rectangles are counted one after another.

Ex **5** How many rectangles are there in the figure given below?



(a) 16 (b) 10 (c) 8 (d) 11

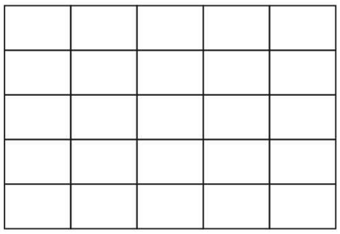
Sol. (*d*) Smallest rectangles
= □ABED, □EFJI, □ILKH, □HGCD, □ DEIH = 5
Rectangles formed with two rectangles
= □ABIH, □DELK, □CEIG, □DFJH = 4
Rectangles formed with three rectangles
= □ABLK, □CFJG = 2
∴ Total number of rectangles = 4 + 2 + 5 = 11

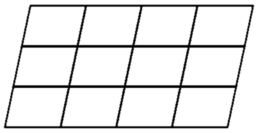


Formula for Counting of Rectangles and Parallelograms

Let, r be the number of rows and c be the number of columns. Now, total number of rectangles or parallelograms

$$= [r + (r - 1) + (r - 2) + \ldots + 1] \times [c + (c - 1) + (c - 2) + \ldots + 1]$$

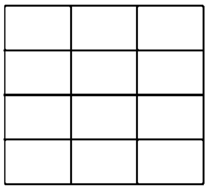




This method is applicable only to the figure, where each row and column is divided into rectangles of equal sections.

Following examples will make this formula easy to understand

***Ex* 6** How many rectangles are there in the following figure?

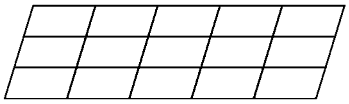


(a) 48 (b) 60 (c) 61 (d) 56

Sol. (*b*) Total number of rectangles $= (4 + 3 + 2 + 1) \times (3 + 2 + 1)$ (here, $R = 4$ and $C = 3$)

$= 10 \times 6 = 60$

***Ex* 7** How many parallelograms are there in the following figure?



(a) 90 (b) 85 (c) 60 (d) 70

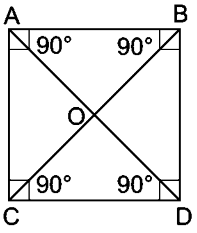
Sol. (*a*) Total number of parallelograms $= (3 + 2 + 1) \times (5 + 4 + 3 + 2 + 1)$ (here, $R = 3$ and $C = 5$)

$= 6 \times 15 = 90$

C. Square

It has

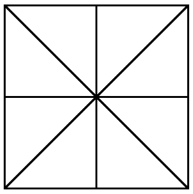
- Four equal sides *i.e.,* AB = BD = DC = CA.
- Equal diagonals *i.e.,* AD = BC.
- Each of the four angles equal to 90° *i.e.,*
  $\angle CAB = \angle ABD = \angle BDC = \angle DCA = 90°$.



Counting Method of Square

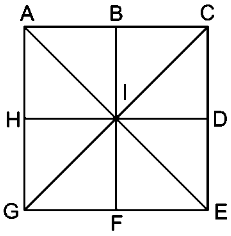
- Smallest squares are counted first.
- At the second step those squares are counted which are formed with two squares and further counting goes on in the same manner *i.e.*, squares formed with 3, 4, …, squares are counted one after another.

***Ex* 8** How many squares are there in the figure given below?



(a) 5 (b) 4 (c) 6 (d) 10

Sol. (*a*)



Smallest squares = □ABIH, □BCDI, □DEFI, □FGHI = 4

Square formed with four squares (the largest square) = □ACEG = 1

∴ Total number of squares = 4 + 1 = 5

Formula for Counting of Squares

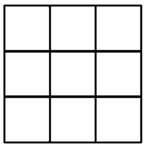
Let r be the number of rows and c be the number of columns.

Now, total number of squares

$$=(r \times c)+\{(r-1)\times(c-1)\}+\{(r-2)\times(c-2)\}+\cdots$$

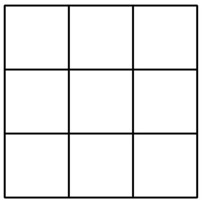
The terms are continued upto the term which is equal to zero (0).

This method is applicable only to the figure, where each row and column is divided into squares of equal sections.



Following examples will make this formula easy to understand

***Ex* 9** How many squares are there in the following figure?

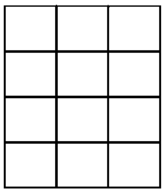


(a) 12 (b) 13 (c) 14 (d) 15

Sol. (c) Total number of squares

According to the formula = (3 × 3) + (2 × 2) + (1 × 1) + (0 × 0) (here, R = 3 and C = 3)
= 9 + 4 + 1 + 0 = 14

***Ex* 10** How many squares are there in the following figure?



(a) 20 (b) 22 (c) 21 (d) 24

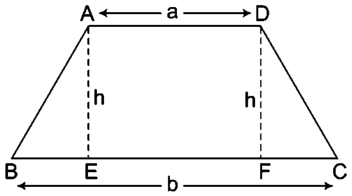
Sol. (*a*) Total number of squares $= (4\times 3)+(3\times 2)+(2\times 1)+(1\times 0)$ (here, R = 4 and C = 3)

$= 12+6+2+0=20$

D. Trapezium

It has

- Pair of opposite sides are parallel to each other *i.e.,* $AD \parallel BC$

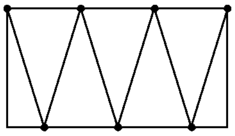

A
a
D
h
h
B
E
F
C
b

- Distance between parallel sides of a trapezium is called its height.

Counting Method of Trapezium

- Count the trapezium according to area or size from small to large.
- Firstly, count the small, secondly count the medium and finally count the large trapezium.

***Ex* 11** How may trapeziums are there in the following figure?



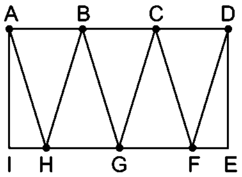
(a) 12 (b) 13 (c) 14 (d) 10

Sol. (*c*) Smallest trapezium = ABHI, CDEF = 2

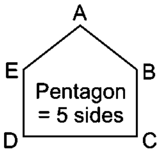
Medium trapezium = ABGI, ACGI, ACFI, ADFI, DCGE, DBGE, DBHE, DAHE, BCFH, AHGC, BGFD = 11

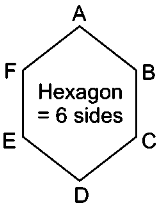
Largest trapezium = AHFD = 1

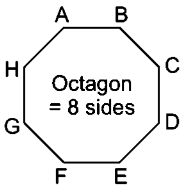
∴ Total trapezium = 2 + 11 + 1 = 14

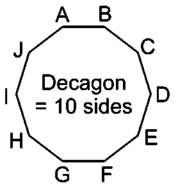


E. Polygons have more than four sides.


A
B
C
D
E
Pentagon
= 5 sides


A
B
C
D
E
F
Hexagon
= 6 sides

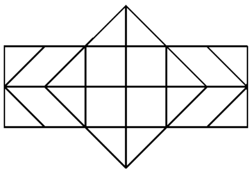

A
B
C
D
E
F
G
H
Octagon
= 8 sides


A
B
C
D
E
F
G
H
I
J
Decagon
= 10 sides

Counting Method of Polygons

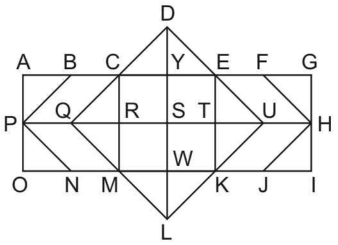
- Smaller polygons are counted first.
- After counting smaller polygons, other polygons are counted according to increasing order of their sizes.

***Ex* 12** How many hexagons are their in the figure given below?



(a) 4 (b) 5 (c) 11 (d) 8

Sol. (*b*) Let us see

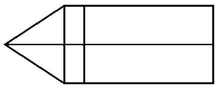


∴ Total hexagons = CDEKLM, CEUKMQ, CFHJMQ, BEUKNP, BFHJNP = 5

Practice Corner **4.2**

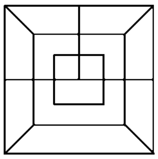
Build your Confidence...

1. How many rectangles are there in the figure given below? **[RRB (ALP) 2009]**



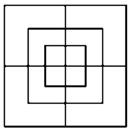
(a) 7 (b) 8 (c) 9 (d) 12

2. How many squares are there in the following figure?



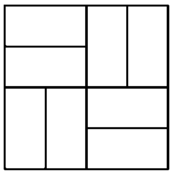
(a) 5 (b) 9 (c) 7 (d) 8

3. How many squares are there in the following figure?



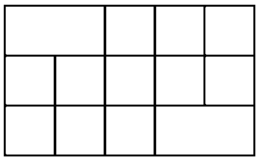
(a) 13 (b) 14 (c) 15 (d) 16

4. How many rectangles are there in the figure given below? **[SSC (CGL) 2008]**



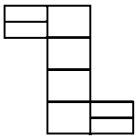
(a) 24 (b) 16 (c) 22 (d) 14

5. How many squares are there in the following figure?



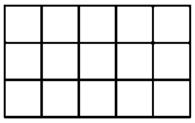
(a) 10 (b) 16 (c) 14 (d) 19

6. How many rectangles are there in the following figure? **[SSC (CPO) 2009]**



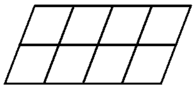
(a) 8 (b) 18 (c) 17 (d) 20

7. How many squares are there in the following figure?



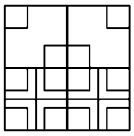
(a) 24 (b) 25 (c) 26 (d) 27

8. How many quadrilaterals are there in the figure given below? **[SSC (FCI) 2012]**



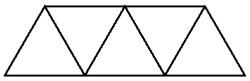
(a) 12 (b) 20 (c) 29 (d) 30

9. How many squares are there in this figure? **[SSC (10+2) 2012]**



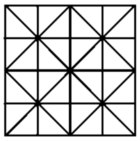
(a) 24
(b) 23
(c) 27
(d) 26

10. How many parallelograms are there in the following figure? **[SSC (CPO) 2008]**



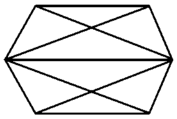
(a) 3
(b) 4
(c) 5
(d) 6

11. Find out the number of squares in the given pattern? **[SSC (Multitasking) 2013]**



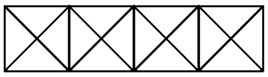
(a) 26 (b) 30 (c) 35 (d) 38

12. How many pentagons are there in the following figure?



(a) 4 (b) 6 (c) 3 (d) 2

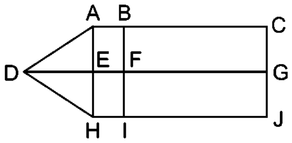
13. How many hexagons are there in the following figure?



(a) 3 (b) 2 (c) 4 (d) 1

Response & Interpretations **(4.2)**

1. (*c*)



Smallest and single rectangles

= ▭ABFE, ▭EFIH, ▭BCGF, ▭FGJI = 4

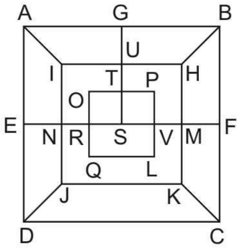
Rectangles formed with two rectangles

= ▭ABIH, ▭AEGC, ▭EGJH, ▭BCJI = 4

Largest rectangle = ▭ACJH = 1

∴ Total number of rectangles = 4 + 4 + 1 = 9

2. (*b*) The figure in question has been marked as shown in the following figure

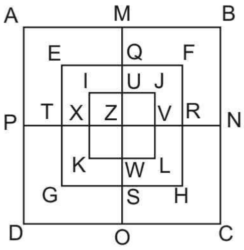


Clearly, there are total nine squares in the figure namely;

□ABCD, □AGSE, □GBFS, □IUSN, □UHMS, □OTSR, □TPVS, □IHKJ and □OPLQ.

∴ Total number of squares = 9

3. (*c*) The figure in the question may be labelled as shown in the figure below



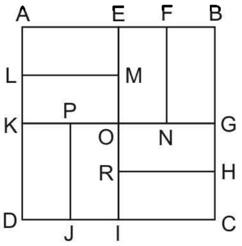
In the inner most square, there are five squares namely □IXZU, □UZVJ, □XKWZ, □ZWLV and □IJKL.

In the middle square there are five squares namely □ETZQ, □QZRF, □TZSG, □ZSHR and □EGHF.

In the outer most square there are five square namely □APZM, □MZNB, □PDOZ, □ZOCN and □ABCD

∴ Total number of squares = 5 + 5 + 5 = 15

4. (*b*)

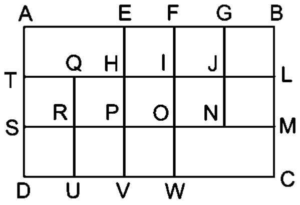


Total 16 rectangles are as follow

▭ AEID,
▭ KGCD,
▭ KPJD,
▭ BGNF,
▭ AFNK,
▭ BEIC,
▭ AEML,
▭ POIJ,
▭ ORHG ,
▭ BERH,
▭ ABGK,
▭ LMOK,
▭ EFNO,
▭ HCIR,
▭ PGCJ

and ▭ LMID

5. (*d*) There are a total of 19 squares in the figure, which have been marked as shown in the following figure



There are three squares in the upper row □EFIH, □ FGJI and □GBLJ.

There are five squares in the middle row namely

□ TQRS, □QHPR, □ HIOP, □ IJNO and □JLMN.

There are three squares in the lower row namely

□SRUD, □RPVU and □ POWV.

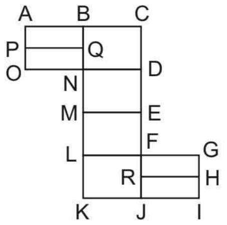
By combining two upper rows there are three squares namely □AEPS, □ EGNP and □ FBMO.

By combining two lower rows there are three squares namely □THVD, □QIWU and □ ILCW.

From all the three rows combined together there are two squares namely □AFWD and □EBCV.

∴ Total number of squares = 3 + 5 + 3 + 3 + 3 + 2 = 19

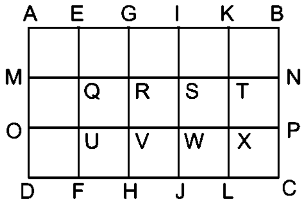
6. (*b*)



Total 18 rectangles are as follow

▭ ABQP,
▭ NDEM,
▭ FGHR ,
▭ BCEM,
▭ FGIJ,
▭ NDJK,
▭PQNO,
▭MEFL,
▭RHIJ,
▭NDFL,
▭ACDO,
▭LGIK and
▭BCDN,
▭LFJK,
▭ABNO,
▭MEJK,
▭BCFL,
▭BCJK

7. (*c*)



There are five squares in the upper row of the main figure namely □AEQM, □EGRQ, □GISR, □IKTS and □KBNT.

Hence, there are fifteen squares, five in each row of the main figure.

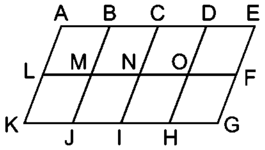
Similarly, there are total eight squares— Four in each bigger row formed by combining two rows at a time of the main figure *i.e.*, □AOVG, □EUWI, □GVXK, □IWPB, □ MDHR, □QFJS, □RHLT and □SJCN and finally there are three squares □AIJD, □EKLF and □GBCH from the main figure.

Hence, there are a total of 26 squares in the figure.

Shortcut Method

Number of squares = (5 × 3) + (4 × 2) + (3 × 1) + (2 × 0)
= 15 + 8 + 3 + 0 = 26

8. (*d*)



Smallest quadrilaterals = ▱ABML, ▱BCNM, ▱CDON, ▱DOFE, ▱LKJM, ▱MNIJ, ▱NIHO, ▱OFGH = 8

Quadrilaterals formed with two quadrilaterals

= ▱ABJK, ▱ BCIJ, ▱CDHI, ▱ DEGH, ▱ ACNL, ▱CEFN, ▱LNIK, ▱NFGI, ▱BDOM, ▱MOHJ = 10

Quadrilaterals formed with three quadrilaterals

= ▱ADOL, ▱BEFM, ▱LOHK, ▱MFGJ = 4

Quadrilaterals formed with four quadrilaterals

= ▱ACIK, ▱CEGI, ▱ BDHJ, ▱AEFL, ▱ LFGK= 5

Quadrilaterals formed with six quadrilaterals

= ▱ADHK, ▱ BEGJ = 2

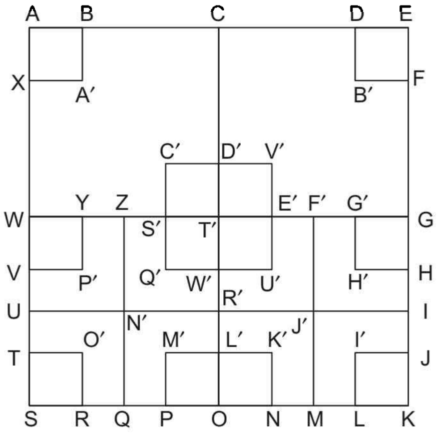
Largest quadrilateral = ▱AEGK = 1

∴ Total number of quadrilaterals = 8 + 10 + 4 + 5 + 2 + 1
= 30

Shortcut Method

Number of quadrilaterals = (4 + 3 + 2 + 1) × (2 + 1)
= 10 × 3 = 30

9. (*c*) Naming the figure

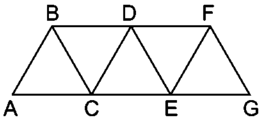


Names of the squares are

☐ ABA′X, ☐ DEFB′, ☐ C′D′T′S′, ☐ D′V′E′T′,
☐ WYP′V, ☐ S′T′W′Q′, ☐ T′E′U′W′, ☐ G′GHH′,
☐ TO′RS, ☐ M′L′OP, ☐ L′K′NO, ☐ I′JKL,
☐ ACT′W, ☐ CEGT′, ☐ WT′OS, ☐ T′GKO,
☐ AEKS, ☐ C′V′U′Q′, ☐ WZN′U, ☐ ZT′R′N′
☐ T′F′J′R′, ☐ F′GIJ′, ☐ UN′QS, ☐ N′R′OQ
☐ R′J′MO, ☐ J′IKM, ☐ ZF′MQ.

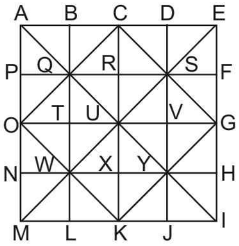
Hence, there are 27 squares in this figure.

10. (*d*)



The above figure has following six parallelograms
▱ABDC, ▱ABFE, ▱BCED, ▱BCGF,
▱CDFE and ▱DEGF

11. (*c*) Smallest squares are ☐ ABQP, ☐ BCRQ, ☐ CDSR, ☐ DEFS, ☐ PQTO, ☐ QRUT, ☐ RSVU, ☐ SFGV, ☐ OTWN, ☐ TUXW, ☐ VYXU, ☐ VGHY, ☐ NWLM, ☐ WXKL, ☐ XYJK, ☐ YHIJ = 16



Squares formed with four triangles
= ☐ QCSU, ☐ SGYU, ☐ YKWU, ☐ WOQU = 4

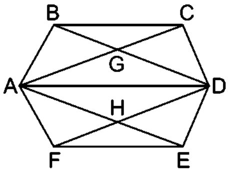
Squares formed with four small squares
= ☐ ACUO, ☐ BDVT, ☐ CEGU, ☐ PRXN, ☐ QSYW,
☐ RFHX, ☐ OUKM, ☐ TVJL, ☐ UGIK, ☐ OCGK = 10

Squares formed with nine small squares
= ☐ ADYN, ☐ BEHW, ☐ PSJM, ☐ QFIL = 4

Largest square = ☐ AEIM = 1

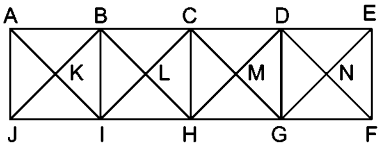
∴ Total squares = 16 + 4 + 10 + 4 + 1 = 35

12. (*b*)



Pentagons are ABCDH, CBAED, GAFED, BAFED, FDCBA, AFEDC. Hence, there are 6 pentagons.

13. (*a*)



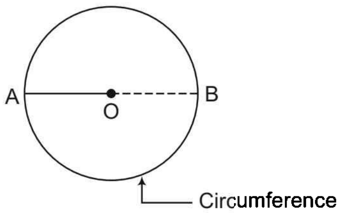
Smallest hexagons = KBCMHI, LCDNGH = 2

Largest hexagons = KBDNGI = 1

∴ Total hexagons = 2 + 1 = 3

Type 3 Counting of Circles and Colours

In this type of questions, a candidate is required to find the number of circles in the given figure.



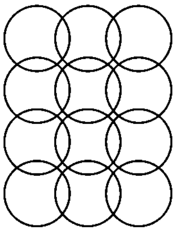
O = Centre, AO = OB = Radius

AB = Diameter, $\text{Radius} = \dfrac{\text{Diametre (AB)}}{2}$

Counting Method of Circle

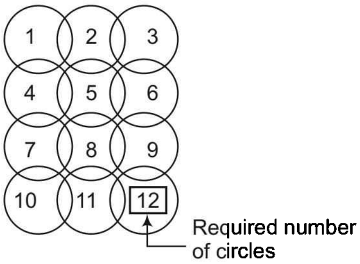
Keep writing numbers one by one inside the circles starting from 1 *i.e.,* for 1st circle put 1, for 2nd circle put 2, for 3rd circle put 3 and so on. The number what is put for the last circle is the required number of circles.

***Ex* 13** How many circles are there in the figure given below?



(a) 10 (b) 14 (c) 12 (d) 18

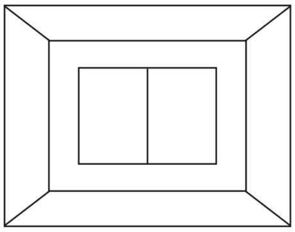
Sol. (c) In the given questions figure, we start counting of circles and mark them as 1, 2 and so on and finally we end on getting 12 number of circles as shown in the following figure.



Counting Method of Colour

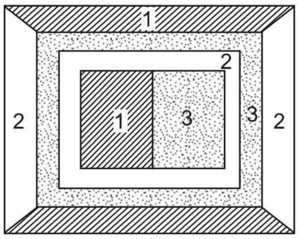
In this type of questions, a figure is given in which two adjacent areas cannot have the same colours. The candidate is required to find out the least number of colours to be used to fill the figure.

***Ex* 14** Consider the figure given below and find the least number of colours to be used to fill the figure, if not two adjacent area can have the same colour?



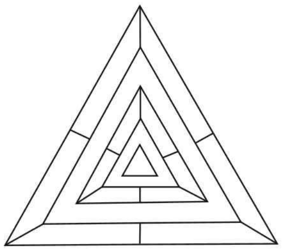
(a) 2 (b) 4 (c) 3 (d) 6

Sol. (c)



So, there are only 3 colours needed to fill the figure.

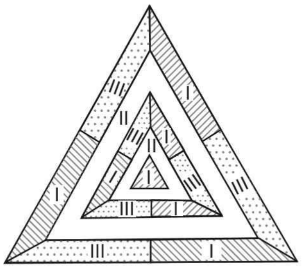
Ex **15** Consider the figure given below and answer the item that follows



Find the least number of colours to be used to fill the figure, if not two adjacent areas can have the same colour.

(a) 3 (b) 4 (c) 5 (d) 6

Sol. (*a*)

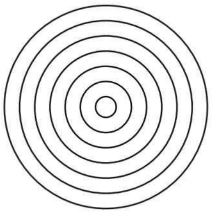


So, there are only three colours needed to fill the figure.

Practice Corner **4.3**

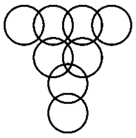
Build your Confidence...

1. How many circles are there in the figure given below?



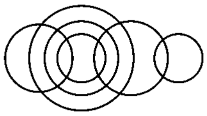
(a) 7 (b) 9 (c) 8 (d) 10

2. How many circles are there in the figure given below? **[UP B.Ed. 2012]**



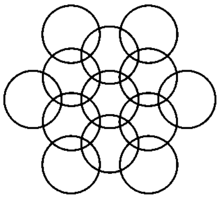
(a) 4 (b) 8 (c) 9 (d) 10

3. How many circles are there in the figure given below?



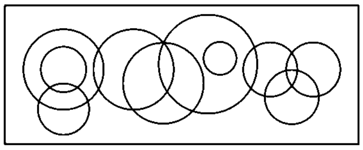
(a) 6 (b) 7 (c) 10 (d) 8

4. Find the total number of circles in the figure given below. **[SSC (DEO) 2012; LIC (ADO) 2007]**



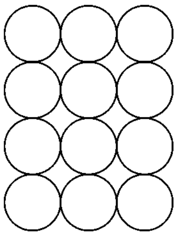
(a) 10
(b) 11
(c) 12
(d) 13

5. How many circles are there in the following figure?



(a) 12
(b) 14
(c) 13
(d) 10

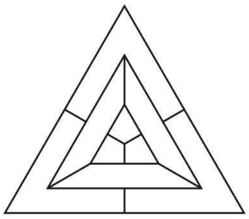
6. In the adjoining figure, if the centres of all the circles are joined by horizontal and vertical lines, then find the number of squares that can be formed.



(a) 6 (b) 7 (c) 8 (d) 1

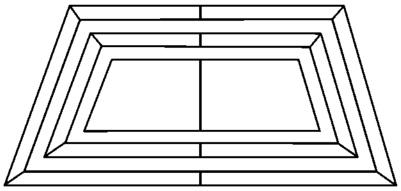
Directions (Q. Nos. 7-9) If in the given figure, no two adjacent areas can have the same colour, find the least number of colour to be needed to fill the figure/areas.

7.



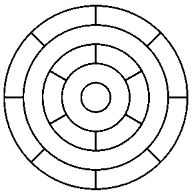
(a) 3 (b) 4 (c) 5 (d) 6

8.



(a) 8 (b) 4 (c) 3 (d) 5

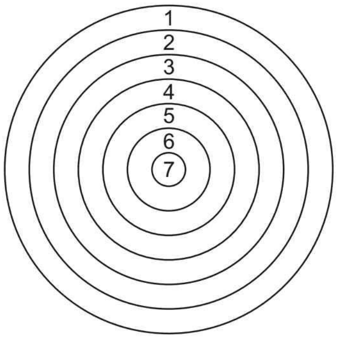
9.



(a) 3
(b) 4
(c) 5
(d) 6

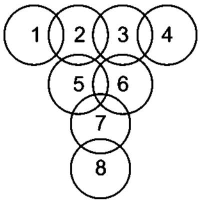
Response & Interpretations **(4.3)**

1. *(a)*



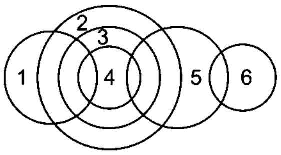
Clearly shown that, total number of circles = 7

2. *(b)*



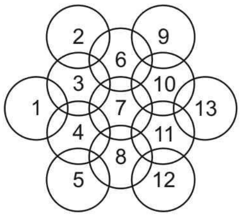
Clearly shown that, total number of circles = 8

3. *(a)*



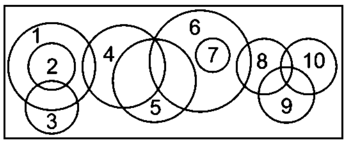
Clearly shown that, total number of circles = 6

4. (*d*)



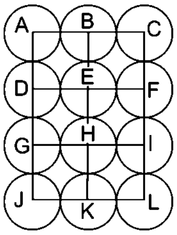
Clearly, shown that, total number of circles = 13

5. (*d*)



Clearly, shown that, total number of circles = 10

6. (*c*) We shall join the centres of all the circles by horizontal and vertical lines and then label the resulting figure as shown.



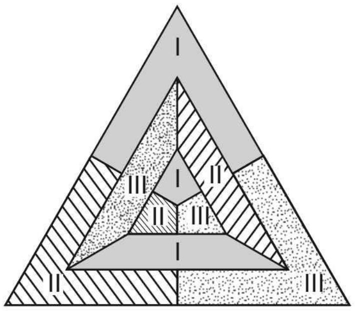
The simplest squares are ABED, BCFE, DEHG, EFIH, GHKJ and HILK *i.e.,* 6 in number.

The squares composed of four simple squares are ACIG and DFLJ *i.e.,* 2 in number.

Thus, 6 + 2 = 8 squares will be formed.

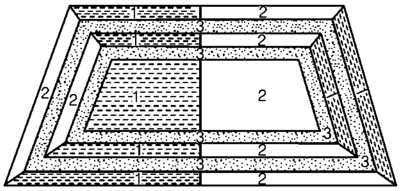
7. (*a*) Atleast three colours are needed to fill the figure so, that no two adjacent areas can have the same colour.

This can be better understood with the help of following diagram

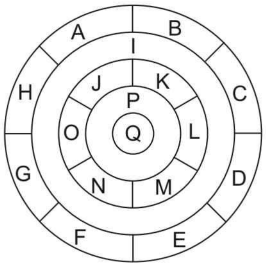


8. (*c*) Atleast three colours are needed to fill the figure based on trapezium , so that no two adjacent area can have the same colour.

The figure based on condition is given below



9. (*a*) We shall label the various regions in the given figure as shown.



The regions A, C, E and G can have the same colour say colour 1.

The regions B, D, F and H can have the same colour (but different from colour 1) say colour 2.

The region I lies adjacent to each one of the regions A, B, C, D, E, F, G and H and therefore it should have a different colour say colour 3.

The regions J, L and N can have the same colour (different from colour 3) say colour 1.

The regions K, M and O can have the same colour (different from the colours 1 and 3). Thus, these regions will have colour 2.

The region P cannot have any of the colours 1 and 2 as it lies adjacent to each one of the regions J, K, L, M, N and O and so it will have colour 3.

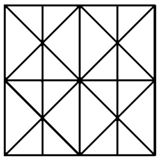
The region Q can have any of the colours 1 or 2.

So, minimum number of colours required is 3.

Master Exercise

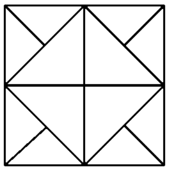
Take a Leap...

1. What is the number of straight lines in the following figure?



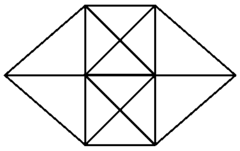
(a) 11 (b) 14 (c) 16 (d) 17

2. How many triangles are there in the following figure?



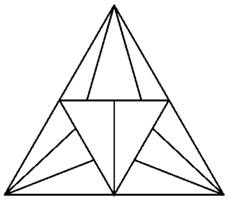
(a) 16 (b) 20 (c) 12 (d) 22

3. How many triangles are there in the figure given below? **[SSC (CPO) 2009]**



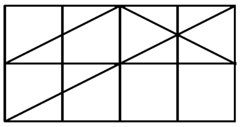
(a) 20 (b) 24 (c) 28 (d) 32

4. Find the number of triangles in the following diagram **[UP PSC 2013]**



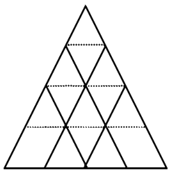
(a) 22 (b) 23 (c) 19 (d) 20

5. How many triangles are there in the following figure?



(a) 29
(b) 23
(c) 19
(d) None of these

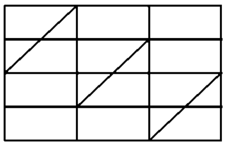
6. Consider the following figure and answer the item that follows



What is the total number of triangles in the above grid? **[UPSC (CSAT) 2011]**

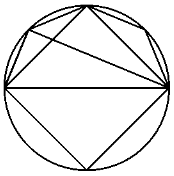
(a) 27 (b) 26 (c) 23 (d) 22

7. How many triangles are there in the following figure?



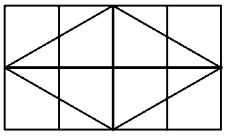
(a) 10 (b) 14 (c) 12 (d) 11

8. How many triangles are there in the following figure?



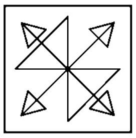
(a) 10 (b) 8 (c) 12 (d) 11

9. How many triangles are there in the following figure?



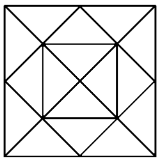
(a) 22 (b) 18 (c) 20 (d) 24

10. Find out the number of triangles in this figure. **[SSC (CGL) April 2014]**



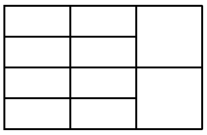
(a) 18 (b) 12 (c) 14 (d) 16

11. How many squares are there in the figure given below? **[CMAT 2014]**



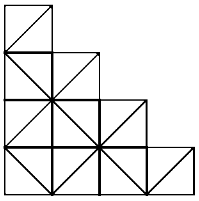
(a) 4 (b) 5 (c) 6 (d) 7

12. How many rectangles are there in the following figure?



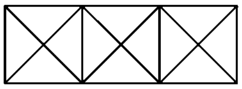
(a) 24 (b) 25
(c) 30 (d) None of these

13. How many squares are there in the following figure? **[SSC (CPO) 2011]**



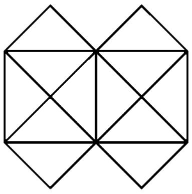
(a) 14 (b) 16 (c) 22 (d) 12

14. How many triangles and squares are there in the figure given below? **[RRB (ASM) 2009, RPSC 2013]**



(a) 28 triangles, 5 squares (b) 24 triangles, 4 squares
(c) 28 triangles, 4 squares (d) 24 triangles, 5 squares

Directions (Q. Nos. 15-17) Following questions are based on figure given below. **[CG PSC 2013, GIC 2009]**

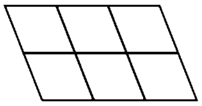


15. How many straight lines are there in the given figure?
(a) 11 (b) 13 (c) 15 (d) 21

16. How many triangles are there in the given figure?
(a) 12 (b) 16 (c) 20 (d) 22

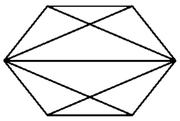
17. How many squares are there in the given figure?
(a) 5 (b) 6 (c) 7 (d) 8

18. How many parallelograms are there in the figure given below?



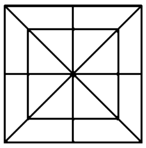
(a) 14 (b) 15 (c) 18 (d) 16

19. How many quadrilaterals are there in the figure given below?



(a) 6 (b) 7 (c) 9
(d) 10

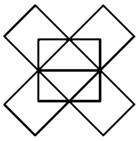
Directions (Q. Nos. 20-21) Following questions are based on figure given below.



20. How many triangles are there in the following figure?
(a) 16 (b) 24 (c) 28 (d) 32

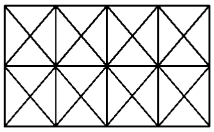
21. Count the number of squares in the figure given.
(a) 4 (b) 8 (c) 10 (d) 12

22. How many pentagons are there in the following figure?



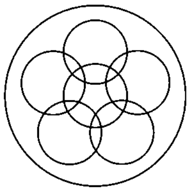
(a) 12 (b) 13 (c) 11 (d) 10

23. How many hexagons are there in the following figure?



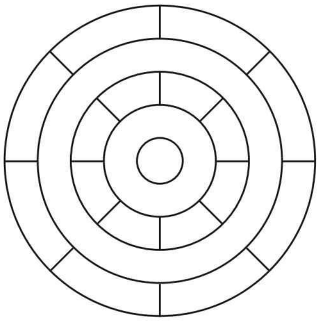
(a) 14 (b) 15 (c) 16 (d) 12

24. How many circles are there in the figure given below? **[SSC (CPO) 2010]**



(a) 4 (b) 5 (c) 6 (d) 7

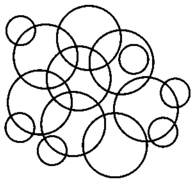
25. Consider the figure given below and answer the question that follows



What is the minimum number of different colours required to paint the figure given above such that no two adjacent regions have the same colour? **[UPSC (CSAT) 2011]**

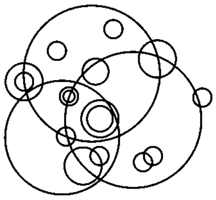
(a) 3 (b) 4
(c) 5 (d) 6

26. How many circles appear below?



(a) 10 (b) 14 (c) 12 (d) 13

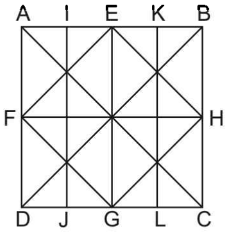
27. How many different sized circles appear below?



(a) 10 (b) 13 (c) 18 (d) 19

Response & Interpretations (Master Exercise)

1. (*b*) The figure has been labelled as shown in the following figure

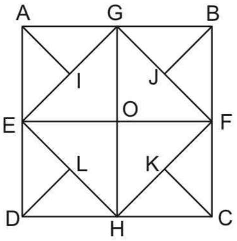


It is clear from the figure that the straight lines in the figure are as follow

(i) Straight lines from the outer square = AB, BC, CD, AD = 4
(ii) Straight lines in the diagonals = AC, BD = 2
(iii) Other straight lines inside the square = EG, FH, EF, FG, GH, EH, IJ, KL = 8

Therefore, total number of straight lines is 14.

2. (*b*) The figure in the question may be labelled as shown below

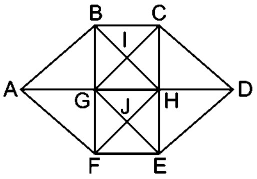


There are nine triangles in the upper half of the figure ABFE = ΔAEI, ΔAIG, ΔAEG, ΔGEO, ΔGBJ, ΔBFJ, ΔGBF, ΔGOF and ΔGEF.

Similarly, there are nine triangles in the lower half figure *i.e.,* EFCD.

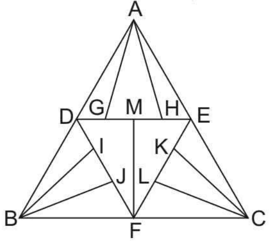
There are two more triangles ΔEGH and ΔFGH.
Hence, there are a total of 20 triangles.

3. (*c*)



Total 28 triangles are as follow
ΔABG, ΔAFG, ΔCHD, ΔHDE, ΔBGI,
ΔBCI, ΔHCI, ΔHGI, ΔGHJ, ΔHEJ,
ΔEFJ, ΔGFJ, ΔABF, ΔCDE, ΔBCG,
ΔBCH, ΔHCG, ΔBHG, ΔGHE, ΔHEF,
ΔGFE ΔGHF, ΔABH, ΔAFH, ΔCDG,
ΔGDE, ΔBHF and ΔCGE

4. (*a*) In the given diagram, there are 22 triangles which can be better understood with the help of following diagram.



In the above figures,

Triangles consisting of 1 unit are ΔADG, ΔAGH, ΔAHE, ΔDMF, ΔFME, ΔDIB, ΔIBJ, ΔJBF, ΔCFL, ΔCLK and ΔCKE *i.e.,* 11 triangles.

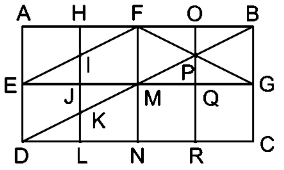
Triangles consisting of 2 units are ΔADH, ΔAGE, ΔDFE, ΔDBJ, ΔIBF, ΔECL and ΔCKF *i.e.,* 7 triangles.

Triangles consisting of 3 units are ΔADE, ΔBDF and ΔCFE *i.e.,* 3 triangles.

Triangle consisting of whole figure is ΔABC *i.e.,* 1 triangle.

So, total number of triangles = 11 + 7 + 3 + 1 = 22

5. (*d*) The figure may be labelled as shown in the following figure



It is clear from the figure that there are seventeen triangles in the upper half of the figure ABGE = ΔEIJ, ΔEFM, ΔAFE, ΔHFI, ΔFOP, ΔOBP, ΔPBG, ΔPGQ, ΔPMQ, ΔPFM, ΔFBM., ΔBMG, ΔFMG, ΔFEG, ΔFBP, ΔMPG and ΔFBG.
There are four triangles in the lower half of the figure EGCD

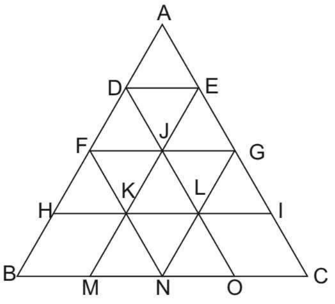
= ΔEMD, ΔJMK, ΔDKL and ΔDMN.

There are four triangles in the main figure ABCD

= ΔDBC, ΔADB, ΔDPR and ΔHBK.

Hence, there are a total of 25 triangles in the figure.

6. (*c*) In the given figures there are 23 triangles which can be better understood with the help of following diagram.



Now, in the above figure,
The triangles of unit length present in the figure are ΔADE, ΔDJF, ΔDEJ, ΔEJG, ΔFKH, ΔFKJ, ΔJKL, ΔJLG, ΔGLI, ΔKMN, ΔKNL and ΔLNO. *i.e.,* 12 triangles.

The triangles of length 2 units are ΔAFG, ΔDHL, ΔEKI, ΔMJO, ΔFBN and ΔNGC and also there is one inverted triangle of length units *i.e.,* ΔFGN.

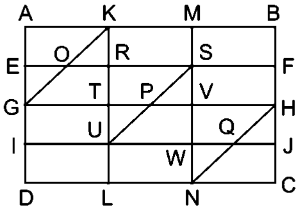
So, total number of triangles of length 2 units are 7.

The triangles of length 3 units are ΔAHI, ΔBDO and ΔMEC *i.e.,* 3 triangles.

The triangle of length 4 units is ΔABC *i.e.,* 1 triangle.

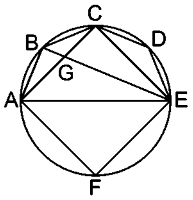
So, total number of triangles = 12 + 7 + 3 + 1 = 23

7. (*c*) The figure, in question may be labelled as shown in following figure



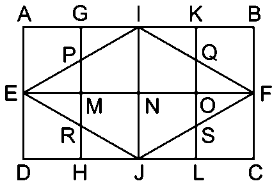
There are 12 triangles in the figure, namely ΔEOG, ΔAGK, ΔKOR, ΔKGT, ΔTUP, ΔRUS, ΔSPV, ΔSUW, ΔWNQ, ΔVNH, ΔHQJ and ΔHNC.

8. (*a*) 10 triangles are as follows



ΔABG, ΔBCE, ΔAGE, ΔCDE, ΔACE, ΔABC, ΔBCG, ΔGCE, ΔAFE and ΔABE.

9. (*a*)

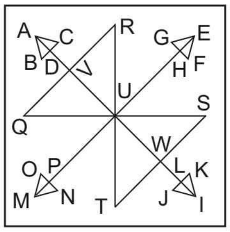


From the figure, it is clear that there are 9 triangles in the upper half of the figure ABFE, namely ΔPEM, ΔPGI, ΔAEI, ΔEIN, ΔIKQ, ΔQOF, ΔIBF, ΔINF and ΔIEF.
Likewise, there are 9 triangles in the lower half EFCD of the main figure.

There are 4 more triangles ΔEPR, ΔEIJ, ΔIFJ and ΔQFS.

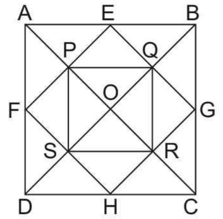
Hence, there are a total of 22 triangles in the figure.

10. (*a*)



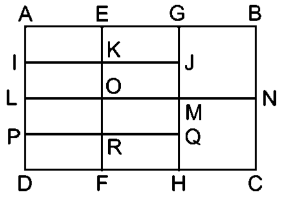
There are 18 triangles in the figure namely,
ΔABC, ΔABD, ΔACD, ΔEFG, ΔEFH, ΔEGH, ΔIJK, ΔIJL, ΔIKL, ΔMNO, ΔMOP, ΔMNP, ΔQRU, ΔQVU, ΔRVU, ΔSTU, ΔSWU and ΔTWU

11. (*d*) The figure in question has been marked as shown in the figure below



It is clear form the figure that there are 7 squares in the figure. ☐ EPOQ, ☐ FPOS, ☐ QORG, ☐ ORHS, ☐ ABCD, ☐ PQRS and ☐ EGHF.

12. (*d*) The figure in question may be labelled as shown in the following figure



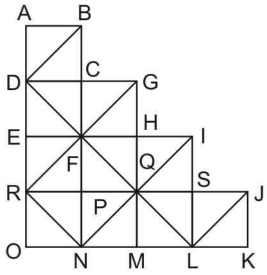
There are a total of 27 rectangles in the figure, namely

▭ AEKI, ▭ EGJK, ▭ AGJI, ▭ IKOL,
▭ KJMO, ▭ IJML, ▭ LORP, ▭ OMQR,
▭ LMQP, ▭ PRFD, ▭ RQHF, ▭ PQHD =12
▭ AGML, ▭ EBNO, ▭ ABNL, ▭ IJQP,
▭ LMHD, ▭ ONCF, ▭ LNCD = 7,
▭ APRE, ▭ IKFD, ▭ AEFD, ▭ ERQG,
▭ KFHJ, ▭ EFHG, ▭ GBCH = 7

and there is 1 more rectangle ▭ ABCD.

Hence, there are a total of 27 rectangles.

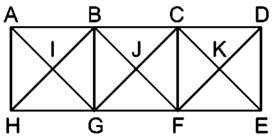
13. (*a*) The figure in question may be labelled as shown in the following figure



There are 14 squares in the figure namely,

□ ABCD, □ DCFE, □ CGHF, □ EFPR,
□ FHQP, □ HISQ, □ RPNO, □ PQMN,
□ MQSL, □ SJKL, □ DGQR, □ EHMO,
□ FILN and □ FQNR.

14. (*a*)



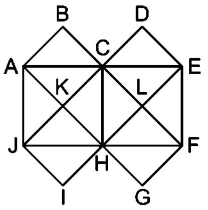
28 triangles are as follows

ΔABI, ΔBIG, ΔGIH, ΔHIA, ΔBCJ, ΔCFJ, ΔFGJ, ΔGBJ, ΔCDK, ΔDEK, ΔEFK, ΔFCK, ΔABG, ΔBGH, ΔGHA, ΔHAB, ΔBFG, ΔCFG, ΔFGB, ΔGBC, ΔCDE, ΔDEF, ΔFEC, ΔFCD, ΔAGC, ΔBFD, ΔBFH and ΔGCE

5 squares are as follows

□BIGJ, □CJFK, □ABGH, □BCFG and □CDEF

Solutions (Q. Nos. 15-17)



15. (*b*) 13 straight lines are as follow

AE, DE, EF, EI, AJ, BF, CH, DJ, AG, JF, AB, JI and FG

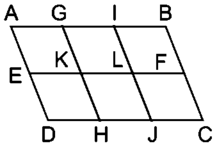
16. (*d*) 22 triangles are as follow

ΔABC, ΔCDE, ΔACK, ΔAKJ, ΔHJK, ΔCKH, ΔCLH, ΔHLF, ΔLEF, Δ CLE, ΔHIJ, ΔFGH, ΔAJH, ΔCJH, ΔACH, ΔACJ, ΔCHF, ΔHEF, ΔCEF, ΔCHE, ΔJCF and ΔAEH

17. (*c*) 7 squares are as follow

□ABCK, □CDEL, □ACHJ, □HIJK, □FGHL, □CEFH and □CLHK

18. (*c*) The figure in question has been labelled at different points as shown in the following figure



From the above diagram parallelograms are as follow

(i) Parallelograms from the outer figure

= ▱ABCD, ▱AIJD, ▱GBCH, ▱ADHG, ▱GHJI, ▱IJCB = 6

(ii) Parallelograms from the upper half of the figure

= ▱AGKE, ▱GILK, ▱IBFL, ▱AILE, ▱GBFK, ▱ABFE = 6

(iii) Parallelograms from the lower half of the figure

= ▱EKHD, ▱KLJH, ▱LFCJ, ▱KFCH, ▱ELJD, ▱EFCD = 6

Therefore, there are a total of 18 parallelograms in the figure.

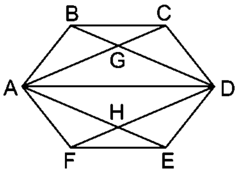
Shortcut Method

Number of parallelograms = (3 + 2 + 1) × (2 + 1)

[∵ C = 3, R = 2]

= 6 × 3 = 18

19. (*c*)

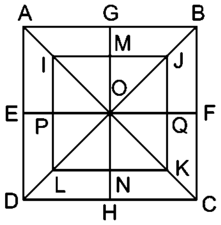


9 quadrilaterals are as follow

□AGDH, □BAFD, □CAED, □AGDF, □AGDE, □ABDH, □ACDH, □ACDF and □ABDE

Solutions (Q. Nos. 20-21)

20. (*d*) The figure in the questions has been labelled as shown below



There are total 32 triangles, counting from different sections of the figure as below

There are 16 triangles in the main figure ABCD namely ΔAOG, ΔGOB, ΔBOF, ΔFOC, ΔCOH, ΔHOD, ΔDOE, ΔEOA, ΔAOB, ΔBOC, ΔCOD, ΔDOA, ΔABC, ΔBCD, ΔCDA and ΔDAB.

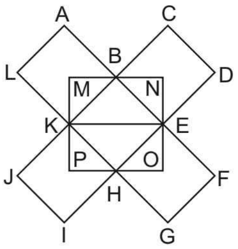
Similarly, there are 16 more triangles in the section IJKL of the figure.

ΔIOP, ΔIMO, ΔMOJ, ΔOQJ, ΔPOL,
ΔOLN, ΔONK, ΔOQK, ΔIOJ, ΔLOK,
ΔLOK, ΔJOK, ΔIJK, ΔILK, ΔILJ and ΔLKJ

Hence, there are a total of 32 triangles in the figure.

21. (*c*) Clearly, shown that there are a total of 10 squares in the figure namely ☐ABCD, ☐IJKL, ☐AGOE, ☐GBFO, ☐FCHO, ☐HDEO, ☐IMOP, ☐MJQO, ☐QKNO and ☐NLPO.

22. (*a*)


A
C
B
L
D
M
N
K
E
P
O
J
F
H
I
G

Pentagons in the figure as follow

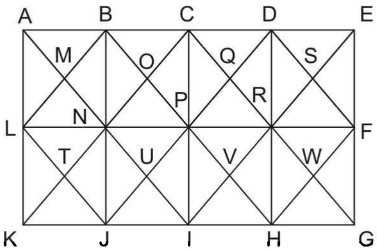
Smallest pentagons = KLABM, BCDEN, EFGHO, HIJKP = 4

Medium pentagons = KMBEH, BNEHK, EOHKB, HPKBE= 4

Largest pentagons = KMBFG, BNEIJ, EOHLA, HPKCD = 4

∴ Total Pentagons = 4 + 4 + 4 = 12

23. (*b*)


A
B
C
D
E
M
O
Q
S
P
R
L
N
F
T
U
V
W
K
J
I
H
G

Smallest hexagons

= MBCQPN, OCDSRP, TNPVIJ, UPRWHI = 4

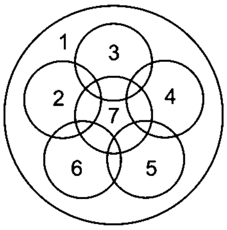
Medium hexagons

= KLBCPJ, JNCDRI, IPDEFH, GFDCPH, HRCBNI, IPBALJ, LBCRIJ, NCDFHI, MBDSRN, TNRWHJ = 10

Largest hexagons = LBDFHJ = 1

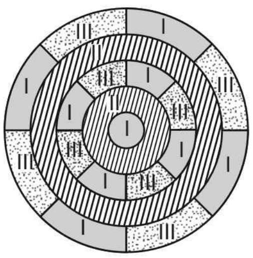
∴ Total hexagons = 4 +10 + 1 = 15

24. (*d*)

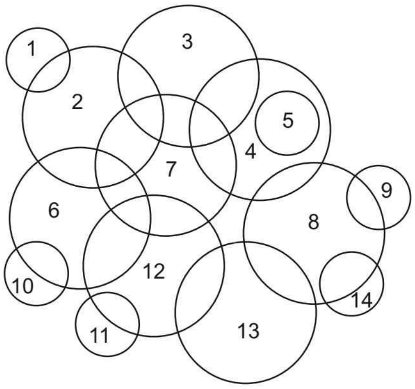


Clearly shown that, total number of circles = 7

25. (*a*) From the analysis of the given figure it is clear that minimum 3 different colours are required to paint the figure such that no 2 adjacent regions have the same colour. This can be better understood with the help of following diagram.

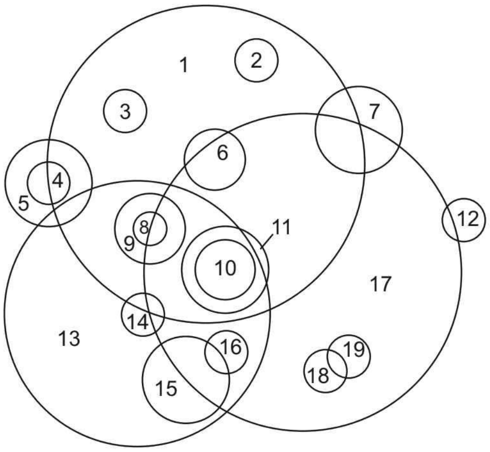

III
I
I
III
II
I
III
I
I
III
I
I
III
I
II
III
I
I
III

26. (*b*) On numbering the circle one by one *i.e.*,


1
3
2
5
4
7
6
9
8
12
10
14
11
13

Clearly, shown that total number of circles = 14

27. (*d*) On numbering the circles one by one *i.e.*,


1
2
3
7
6
4
5
8
11
12
9
10
17
14
13
16
19
18
15

Clearly shown that, total number of circle = 19

5

Completion of Figures

Completion of Figure is finding the missing part of a figure from the given options, so that the option when put at the missing place completes the figure.

Different types of questions covered in this chapter are as follows

- Rotational Symmetry Through an Angle of 90°
- Diagonally Opposite Parts are Similar
- Adjacent Parts are Laterally/Vertically Inverted Images
- Based on Certain Design and Pattern

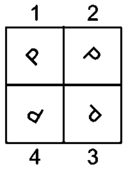
Questions based on completion of figure are divided into two parts, question figure and answer figures. Question figure is given on the left side with the answer figures given on the right side. The question figure is incomplete as its one part (generally 1/4 the figure) is missing denoted by the question mark (?). Here, the candidate is required to choose a figure out of the given answer figures that fits in the place of question mark (?) in the same form as it is given to complete the design of the given question figure.

Different questions on completion of figures can broadly be classified into four different types, which are explained as follows

Type 1 Rotational Symmetry Through an Angle of 90°

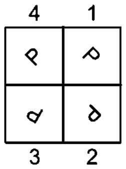
In this type of questions, the question figure looks the same if it is rotated by 90° in clockwise or anti-clockwise direction.

e.g.,



(X)

If the figure (X) is rotated through 90° in clockwise direction, then figure will change as .

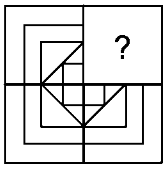


(X′)

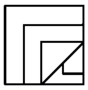
So, figure (X) and (X′) are same. Now, if any of the parts of above figure (X) is missing, then it can be obtained by rotating the figure 90° in either clockwise or anti-clockwise direction.

***Ex* 1** Identify the missing part of the given figure and select it from given answer figures. **[SSC (CPO) 2010)]**

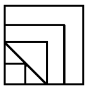
Question Figure **Answer Figures**



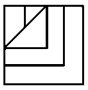
(X)



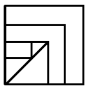
(a)



(b)

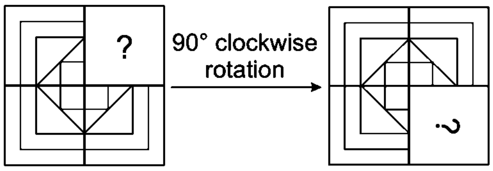


(c)



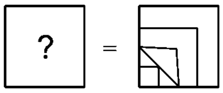
(d)

Sol. (*b*) Here, all the three equal parts have similar design, if rotated in clockwise direction. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.

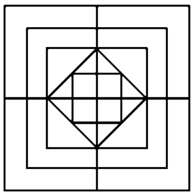


(X) (X′)

Now, by comparing figure (X) with (X′), we get

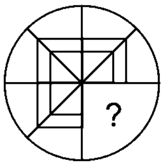


Now, it is clear that answer figure (b) completes the question figure, which looks like as shown in the below figure.

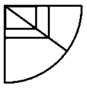


***Ex* 2** Identify the missing part of the given figure and select it from given answer figures.

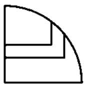
Question Figure **Answer Figures**



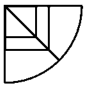
(X)



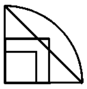
(a)



(b)

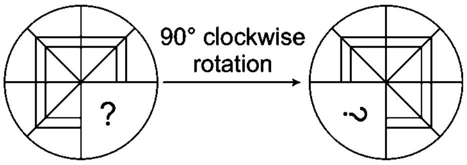


(c)



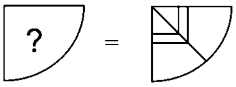
(d)

Sol. (*c*) Here, all the three equal parts have similar design, if rotated in clockwise direction. So, we can obtain the answer figure for the missing portion by rotating the original given figure by 90° clockwise.

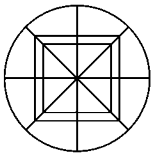


(X) (X′)

Now, by comparing figure (X) with (X′), we get



Now, it is quite clear that option (c) will fill the incomplete part of the question figure (X). After completion, the figure will be look like this.

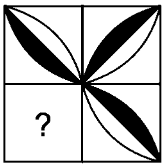


K Memory *Add-ons*

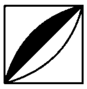
- In some of the questions, the correct option for the missing figure can be given in any rotated form, so candidate can rotate the figures to check the correctness of option.
- If answer figures contain similar figure but in rotated forms, then the correct answer figure is that figure which can be substituted at the missing part with least change in orientation.

Ex **3** Which of the answer figures given will complete the pattern of the question figure? **[SSC (Constable) 2013]**

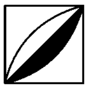
Question Figure **Answer Figures**



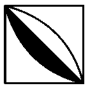
(X)



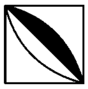
(a)



(b)

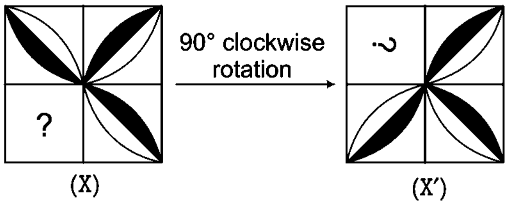


(c)

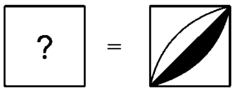


(d)

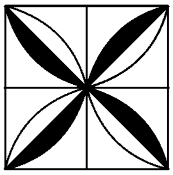
Sol. (*b*) Here, all the three equal parts have similar design, if rotated in clockwise direction. So, we can obtain the answer figure for the missing portion by rotating the question figure (X) by 90° in clockwise direction.



Now, by comparing figure (X) with (X′), we get

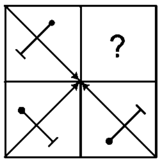


Clearly, option figure (b) completes the original figure which looks like as shown in the below figure.

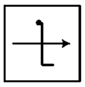


***Ex* 4** In the following question, complete the missing portion of the question figure by selecting from the given answer figures (a), (b), (c) and (d).

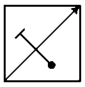
Question Figure **Answer Figures**



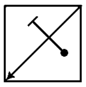
(X)



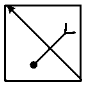
(a)



(b)

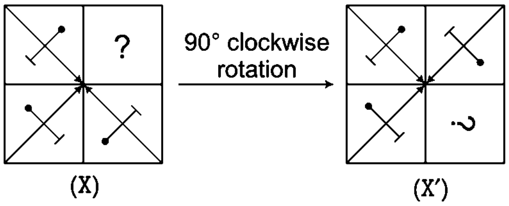


(c)

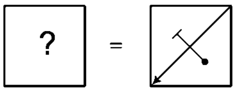


(d)

Sol. (c) Here, all the three equal parts have similar design, rotated in clockwise direction. So, we can obtain the answer figure for the missing portion of question figure (X) by rotating the original given figure by 90° clockwise.



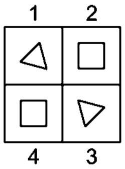
Now, by comparing figure (X) with (X′), we get



Now, it is clear that option (c) will replace (?) to make the figure complete.

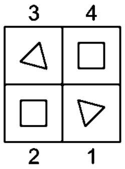
Type 2 Diagonally Opposite Parts are Similar

In this type of questions, the diagonally opposite parts have similar design and if the figure is rotated through 180° in clockwise/anti-clockwise direction the figure remains the same



(X)

In figure (X), diagonally opposite parts *i.e.,* 1-3 and 2-4 have similar design and if figure (X) is rotated through 180°, then figure will change as



(X′)

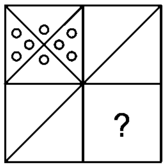
So, figures (X) and (X′) are same.

Now, if any of the parts of above figure (X) is missing, then it can be obtained by rotating the figure 180° in clockwise/ anti-clockwise direction.

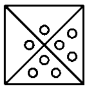
This can be better understood with the help of following examples

Ex **5** Identify the missing part of the question figure and select it from given answer figures.

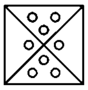
Question Figure **Answer Figures**



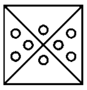
(X)



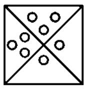
(a)



(b)

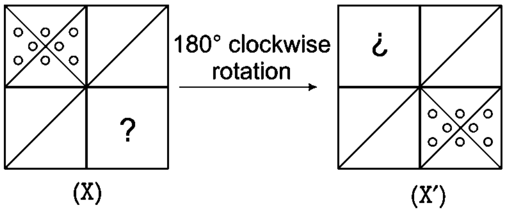


(c)

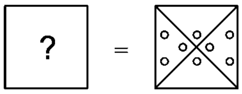


(d)

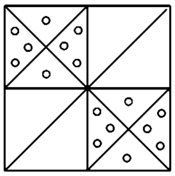
Sol. (*c*) Here, the diagonally opposite parts have similar design.
So, we can obtain the answer figure for the missing portion by rotating the question figure by 180°.



Now, by comparing figures (X) and (X′), we get

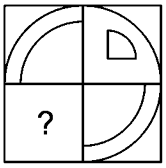


So, it is clear that option (c) will replace (?) to make the question figure complete which look like as shown in the following figure.

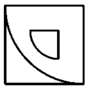


Ex **6** Identify the missing part of the question figure and select it from given answer figures. **[SSC (DEO) 2009]**

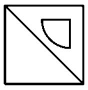
Question Figure **Answer Figures**



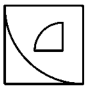
(X)



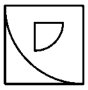
(a)



(b)



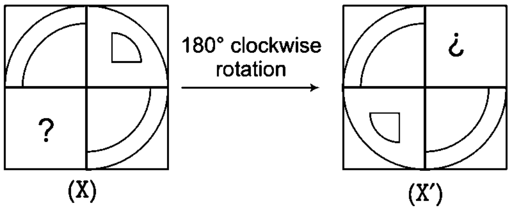
(c)



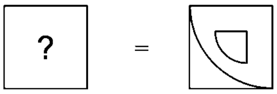
(d)

Sol. (*a*) Here, the diagonally opposite parts have similar design.

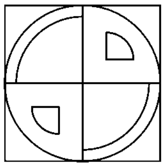
So, we can obtain the answer figure for the missing portion by rotating the original given figure by 180°.



Now, by comparing figure (X) with (X′), we get



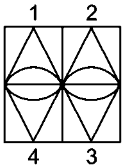
So, it is clear that answer figure (a) completes the question figure X, which looks like as shown in the following figure.



Type 3 Adjacent Parts are Laterally/Vertically Inverted Images

In this type of question, the adjacent parts are laterally/vertically inverted images of each other.

e.g.,



(X)

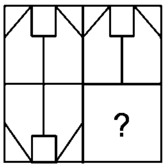
In figure (X), 1 and 2 are laterally inverted images of each other. Similarly, 3 and 4 are laterally inverted image of each other. Also, 1-4 and 2-3 are the pairs of vertically inverted images of each other.

If any part of above figure is missing, then it found out by the vertical or lateral inversion of any of the adjacent figure.

This can be better understood with the help of following example

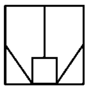
Ex 7 Identify the missing part of the question figure and select it from given answer figures.

Question Figure

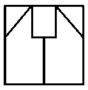


(X)

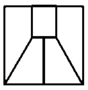
Answer Figures



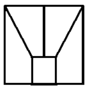
(a)



(b)



(c)



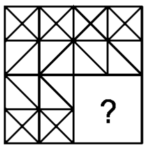
(d)

Sol. (a) Here, the upper two adjacent parts *i.e.,* (1) and (2) have designs which are laterally inverted form of each other and the two left side adjacent parts *i.e.,* (1) and (3) have designs which are vertically inverted form of each other. Then, the design in missing part *i.e.,* (4) will be the laterally inverted form of the design in part (3). So, from the answer options given it is clear that design given in option (a) is the correct laterally inverted form of (3) and it will replace the (?) to complete the pattern.

1	2
3	4

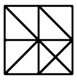
Ex 8 Identify the missing part of the question figure and select it from given answer figure. **[SSC (CPO) 2006]**

Question Figure

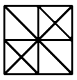


(X)

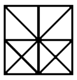
Answer Figures



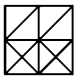
(a)



(b)



(c)



(d)

Sol. (*d*) Let the figure is

1	2
3	4

Here, the upper two adjacent parts *i.e.,* (1) and (2) have designs which are laterally inverted form of each other. Then, the design in missing part *i.e.,* (4) will be the laterally inverted form of the design in part (3). So, from the answer options given it is clear that design given in option (d) is the correct laterally inverted form of (3) and replace the (?) to complete the pattern.

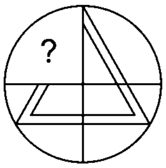
Type 4 Based on Certain Design and Pattern

In this type of questions, they do not follow any of the patterns discussed in the previous types. These questions contain a certain design or pattern with one of its parts missing. A candidate has to complete the design accordingly.

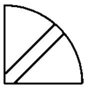
This can be better understood with the help of following examples

***Ex* 9** Identify the missing part of the question figure and select it from the answer figures.

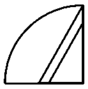
Question Figure **Answer Figures**



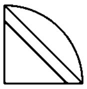
(X)



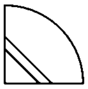
(a)



(b)

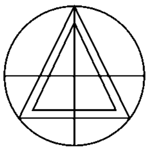


(c)



(d)

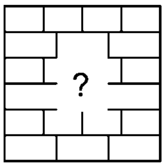
Sol. (*b*) Here, by analysis we can observe that the given pattern is of a doubled lined triangle.

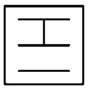


So, it is clear that option (b) will replace the (?) to make the question figure complete as shown in the above figure.

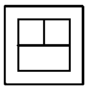
***Ex* 10** Identify the missing part of the question figure and select it fromthe answer figures.

Question Figure **Answer Figures**

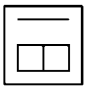




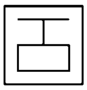
(a)



(b)

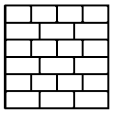


(c)



(d)

Sol. (*d*) Here, by analysis we can observe that in the figure the design of each line repeats itself in alternate lines.



So, it is clear that option (d) will replace the (?) to make the figure complete as shown in the above figure.

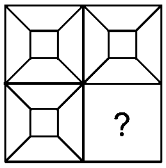
Master Exercise

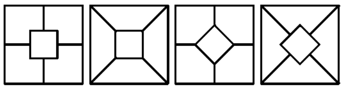
Take a Leap...

Directions (Q. Nos. 1-64) In each of the following questions, a part of question figure is missing. Find out from the given answer figures (a), (b), (c) and (d), that can replace the '?' to complete the question figure.

Question Figure **Answer Figures**

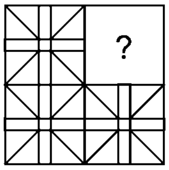
1.

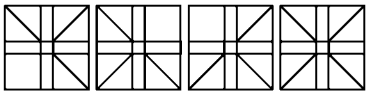




(a) (b) (c) (d)

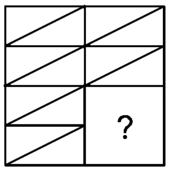
2.

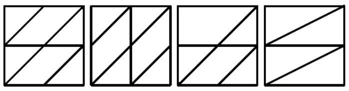




(a) (b) (c) (d)

3.





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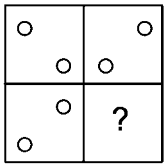
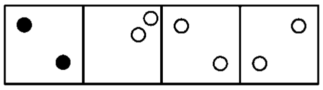
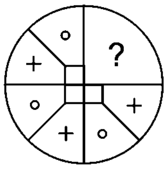


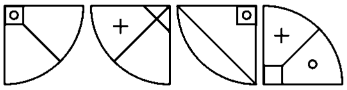


(a) (b) (c) (d)

[SSC (Steno) 2013]

5.

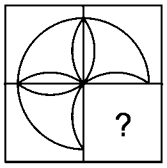


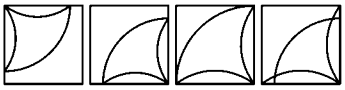


(a) (b) (c) (d)

Question Figure **Answer Figures**

6.





(a) (b) (c) (d)

[SSC (CPO) 2003]

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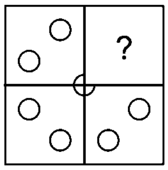
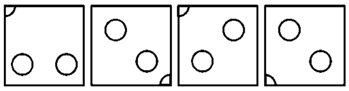
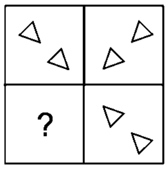


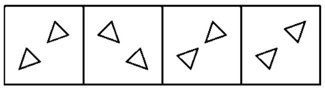


(a) (b) (c) (d)

[UP B. Ed. 2008]

8.

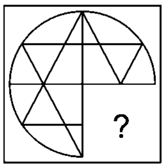


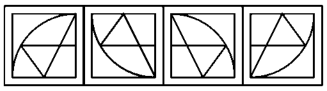


(a) (b) (c) (d)

[SSC (FCI) 2012]

9.

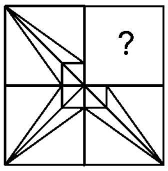


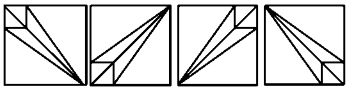


(a) (b) (c) (d)

[SSC (CGL) April 2014]

10.





(a) (b) (c) (d)

Question Figure **Answer Figures**

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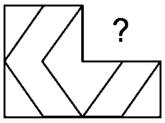

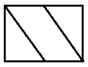
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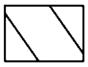
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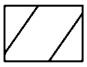
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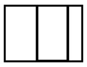
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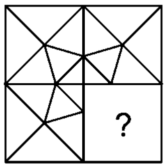

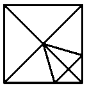
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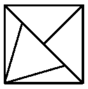
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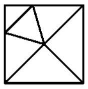
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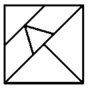
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[SSC (DEO) 2008]

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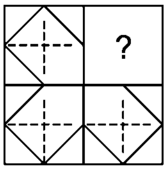

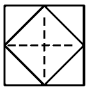
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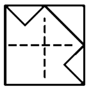
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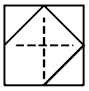
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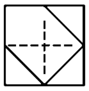
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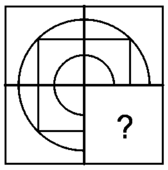

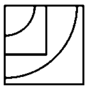
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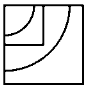
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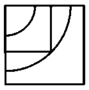
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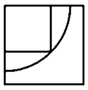
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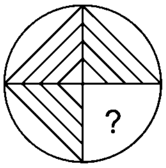

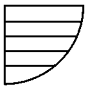
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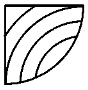
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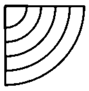
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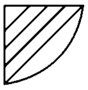
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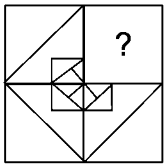

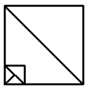
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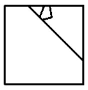
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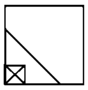
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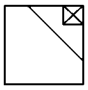
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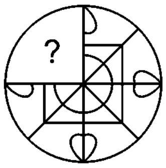
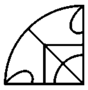
[SSC (FCI) 2012]

17.

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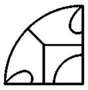
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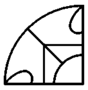
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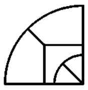
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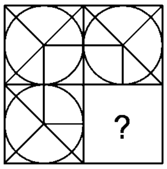
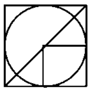
Question Figure **Answer Figures**

18.

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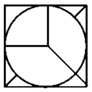
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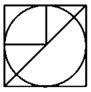
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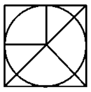
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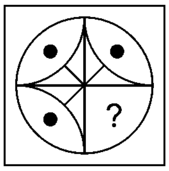
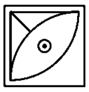
[SSC (CPO) 2013]

19.

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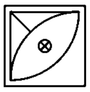
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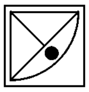
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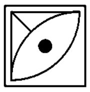
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[SSC (10+2) 2006]

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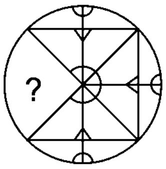

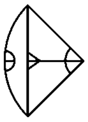
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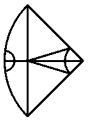
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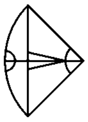
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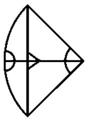
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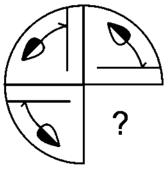

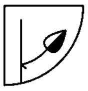
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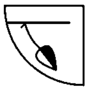
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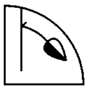
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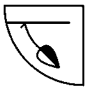
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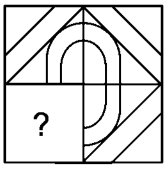

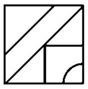
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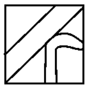
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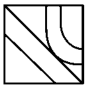
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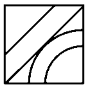
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[GIC 2009]

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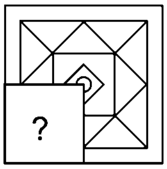

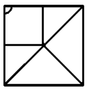
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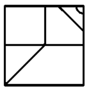
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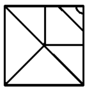
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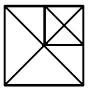
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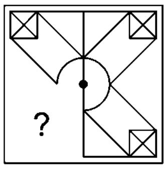

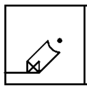
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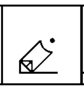
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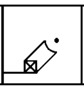
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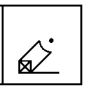
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[SSC (CGL) April 2014]

Question Figure **Answer Figures**

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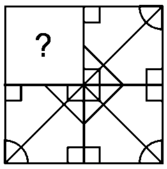

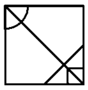
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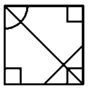
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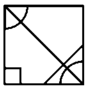
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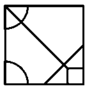
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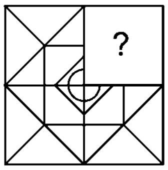

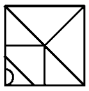
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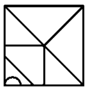
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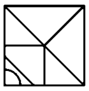
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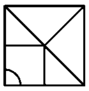
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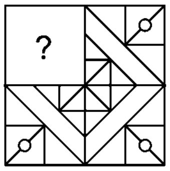

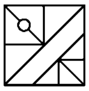
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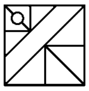
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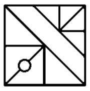
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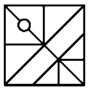
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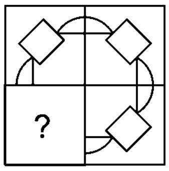

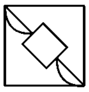
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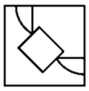
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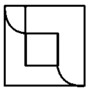
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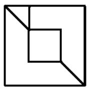
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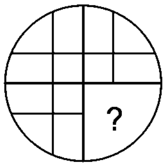

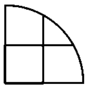
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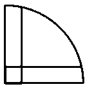
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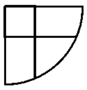
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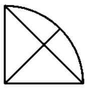
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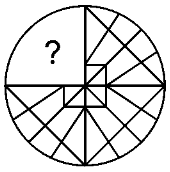
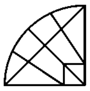
[UP B.Ed 2011]

30.

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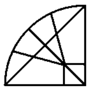
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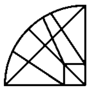
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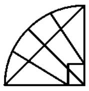
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Question Figure **Answer Figures**

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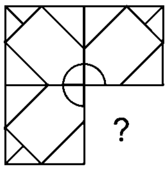

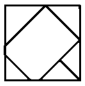
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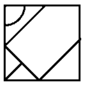
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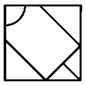
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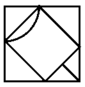
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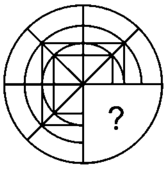
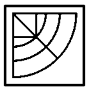
[UP B. Ed. 2011]

32.

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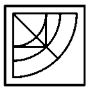
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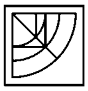
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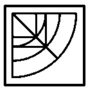
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[SSC (CPO) 2009]

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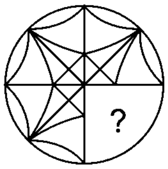

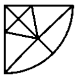
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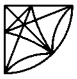
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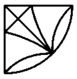
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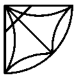
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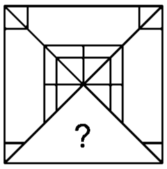

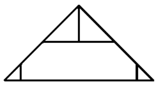
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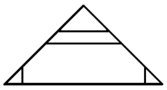
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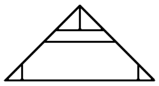
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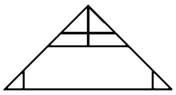
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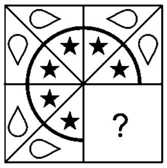

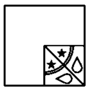
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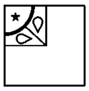
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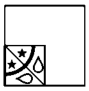
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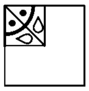
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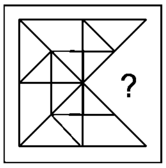
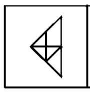
[SSC (CGL) 2013]

Question Figure **Answer Figures**

36.

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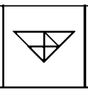
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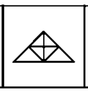
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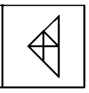
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[SSC (CGL) 2013]

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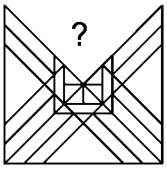

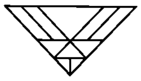
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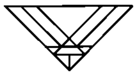
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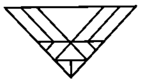
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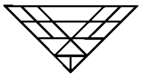
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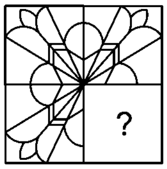

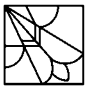
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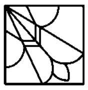
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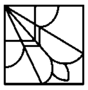
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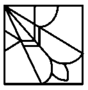
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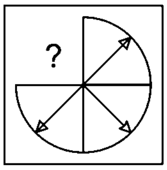

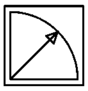
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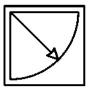
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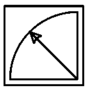
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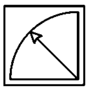
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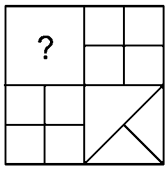
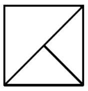
[SSC (CPO) 2008]

40.

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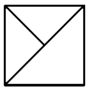
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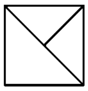
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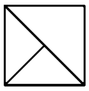
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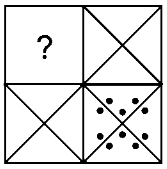

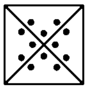
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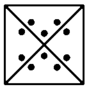
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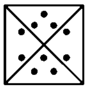
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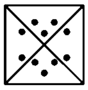
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[UP B. Ed. 2010]

Question Figure **Answer Figures**

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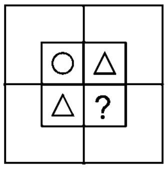

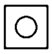
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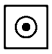
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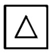
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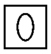
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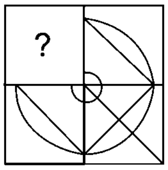

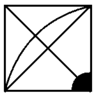
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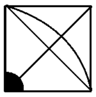
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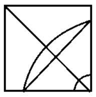
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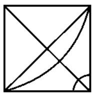
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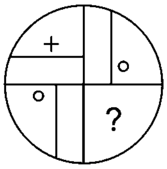
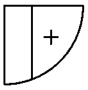
[SSC (Multitasking) 2013]

44.

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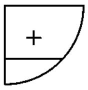
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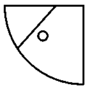
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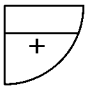
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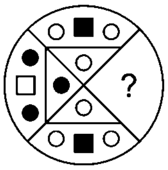

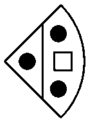
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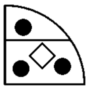
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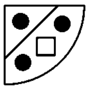
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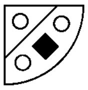
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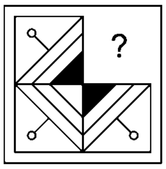
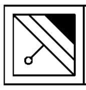
[RRB (TC/CC) 2007]

46.

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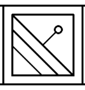
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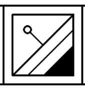
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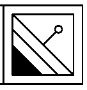
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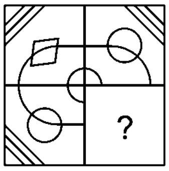

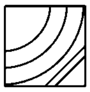
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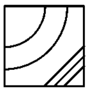
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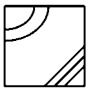
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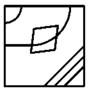
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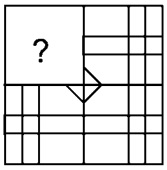
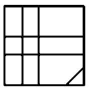
48.

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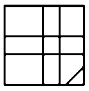
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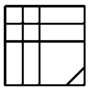
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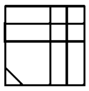
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Question Figure **Answer Figures**

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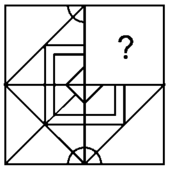

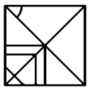
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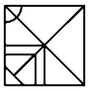
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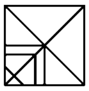
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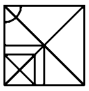
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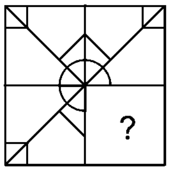

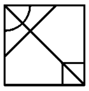
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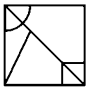
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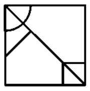
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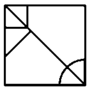
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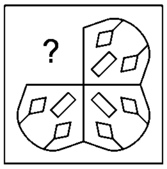
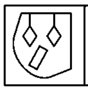
[UP B. Ed. 2009]

51.

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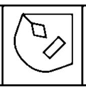
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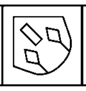
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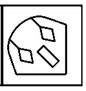
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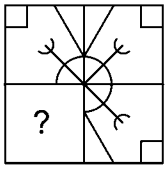

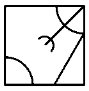
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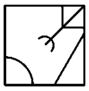
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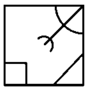
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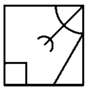
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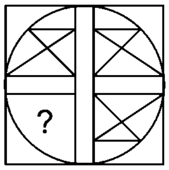

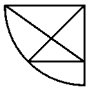
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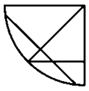
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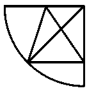
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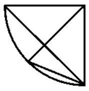
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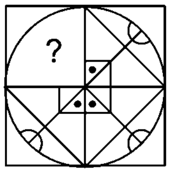
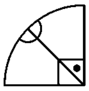
[UP B. Ed. 2011]

54.

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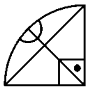
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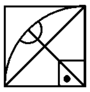
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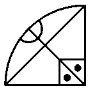
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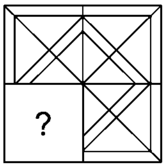
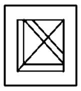
Question Figure **Answer Figures**

55.

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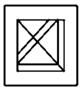
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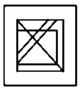
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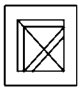
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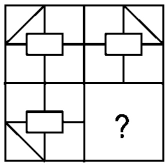
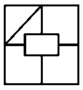
[SSC (Multitasking) 2014]

56.

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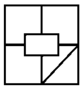
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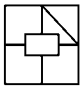
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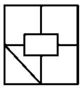
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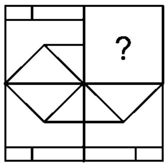
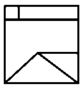
57.

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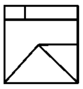
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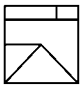
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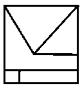
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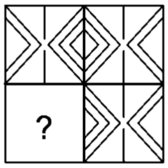
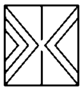
[SSC (CPO) 2007]

58.

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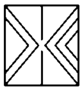
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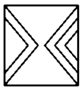
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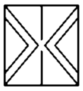
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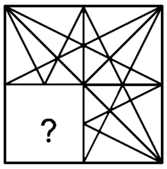
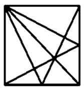
[SSC (10+2) 2013]

59.

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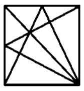
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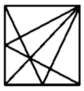
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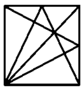
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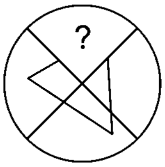
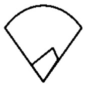
[SSC (10+2) 2010]

60.

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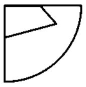
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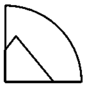
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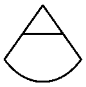
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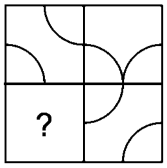
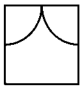
[RRB (TC/CC) 2008]

Question Figure **Answer Figures**

61.

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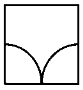
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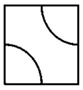
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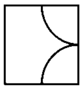
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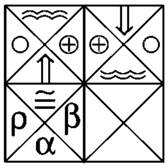
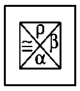
[UP B. Ed. 2011]

62.

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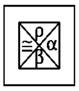
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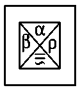
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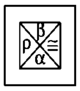
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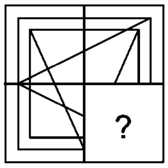
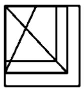
[SSC (10+2) 2013]

Question Figure **Answer Figures**

63.

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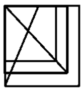
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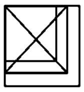
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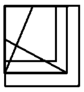
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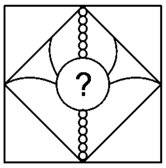
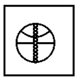
[RRB (TC/CC) 2009]

64.

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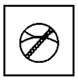
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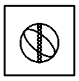
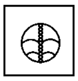
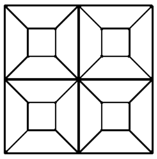

(c)


(d)

[SSC (CGL) 2013]

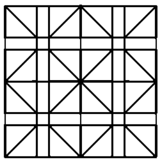
Response & Interpretations (Master Exercise)

1. (*b*) Here, all the three equal parts have exactly same design. So, the fourth part with question mark (?) must also contain the same design to complete the question figure as shown in the following figure



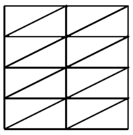
Now, it is clear from the above figure that answer figure (b) will complete the question figure.

2. (*d*) Here, all the three parts have exactly same design. So, the fourth part with question mark (?) must also contain the same design to complete the question figure as shown in the following figure



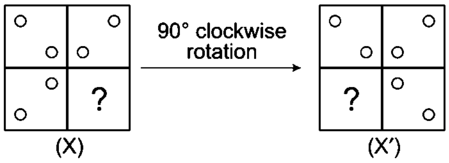
Now, it is clear from the above figure that answer figure (d) will complete the question figure.

3. (*d*) Here, all the three parts have exactly same design. So, the fourth part with question mark (?) must also contain the same design to complete the question figure as shown in the following figure.

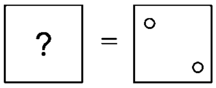


Now, it is clear from the above figure that answer figure (d) will complete the question figure.

4. (*c*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the original given figure by 90° clockwise.

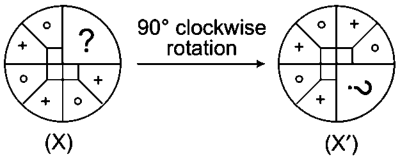


Now, by comparing figure (X) with (X′), we get

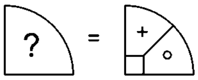


Now, it is clear that answer figure (c) completes the question figure.

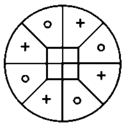
5. (*d*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



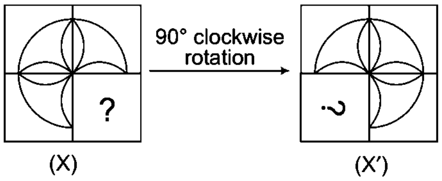
Now, by comparing figure (X) with (X′), we get



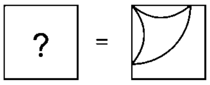
Now, it is clear that answer figure (d) completes the question figure, which looks as shown in the below figure.



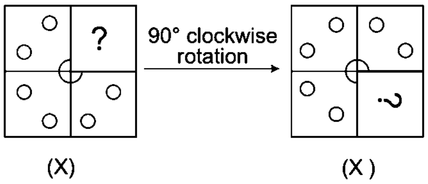
6. (*a*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



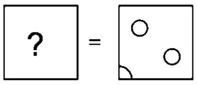
Now, by comparing figure (X) with (X′), we get



7. (*d*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.

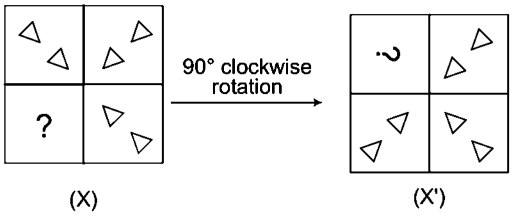


Now, by comparing figures (X) with (X′), we get

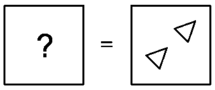


Now, it is clear that answer figure (d) completes the question figure.

8. (*d*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.

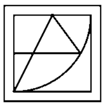


Now, by comparing figures (X) with (X′), we get

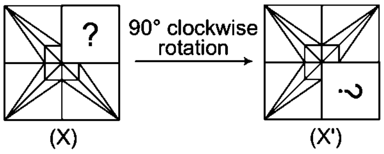


Now, it is clear that answer figure (d) completes the original figure.

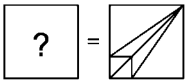
9. (*d*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise. Now, it is clear that answer figure (d) completes the question figure.



10. (*b*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise

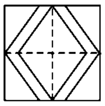


Now, by comparing figure (X) with (X′), we get



Now, it is clear that answer figure (b) completes the question figure.

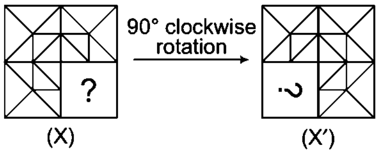
11. (*a*) Here, we can predict the given figure to be equally divided into four parts.



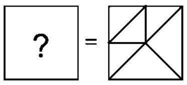
It is clear from the above figure that answer figure (a) resembles the missing part of the given question figure.

Now, it is clear that answer figure (a) complete the question figure.

12. (*c*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



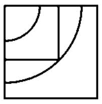
Now, by comparing figure (X) with (X′), we get



Now, it is clear that answer figure (c) completes the question figure.

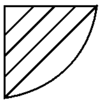
13. (*c*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise. Now, it is clear that answer figure (c) completes the question figure.

14. (*c*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the original given figure by 90° clockwise.



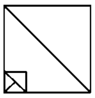
Now, it is clear that answer figure (c) completes the question figure.

15. (*d*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the original given figure by 90° clockwise.

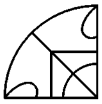


Now, it is clear that answer figure (d) completes the question figure.

16. (*a*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise. Now, it is clear that answer figure (a) completes the question figure.

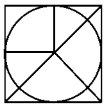


17. (*a*) Here, all the three equ3al parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



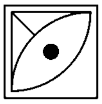
Now, it is clear that answer figure (a) completes the question figure.

18. (*d*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



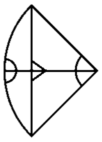
Now, it is clear that answer figure (d) completes the question figure.

19. (*d*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



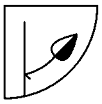
Now, it is clear that answer figure (d) completes the question figure.

20. (*d*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



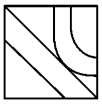
Now, it is clear that answer figure (d) completes the question figure.

21. (*a*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



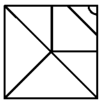
Now, it is clear that answer figure (a) completes the question figure.

22. (*c*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



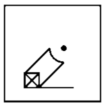
Now, it is clear that answer figure (c) completes the question figure.

23. (*c*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



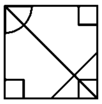
Now, it is clear that answer figure (c) completes the question figure.

24. (*d*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



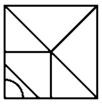
Now, it is clear that answer figure (d) completes the question figure.

25. (*b*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



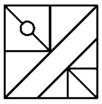
Now, it is clear that answer figure (b) completes the question figure.

26. (*c*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



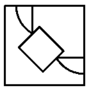
Now, it is clear that answer figure (c) completes the question figure.

27. (*a*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



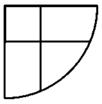
Now, it is clear that answer figure (a) completes the question figure.

28. (*b*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



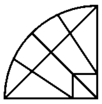
Now, it is clear that answer figure (b) completes the question figure.

29. (*c*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



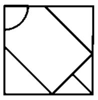
Now, it is clear that answer figure (c) completes the question figure.

30. (*a*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



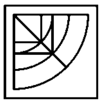
Now, it is clear that answer figure (a) completes the question figure.

31. (*c*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



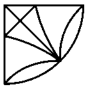
Now, it is clear that answer figure (c) completes the question figure.

32. (*d*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.

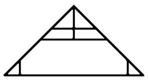


Now, it is clear that answer figure (c) completes the question figure.

33. (*c*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise. Now, it is clear that answer figure (c) completes the question figure.

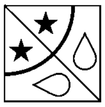


34. (*d*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



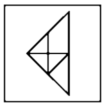
Now, it is clear that answer figure (d) completes the question figure.

35. (*c*) Here, all the three equal parts have similar design., So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



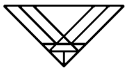
Now, it is clear that answer figure (c) completes the question figure.

36. (*a*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



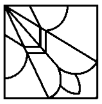
Now, it is clear that answer figure (a) completes the question figure.

37. (*b*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



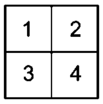
Now, it is clear that answer figure (b) completes the question figure.

38. (*b*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.

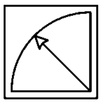


Now, it is clear that answer figure (b) completes the question figure.

Solutions (Q. Nos. 39-43) *In each of the following solutions let the question figure be represented (by its four parts) as*



39. (*d*) As figures (2) and (3) are similar to each other, then figures (1) and (4) must also be similar.



We can obtain the answer figure for the missing portion by rotating the question figure by 180°.

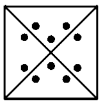
So, it is clear that answer figure (d) will replace (?) to make the question figure complete.

40. (*b*) As figures (2) and (3) are similar to each other, then figures (1) and (4) must also be similar.

We can obtain the answer figure for the missing portion by rotating the question figure by 180°.

So, it is clear that answer figure (b) will replace (?) to make the question figure complete.

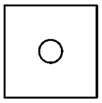
41. (*b*) As figures (2) and (3) are similar to each other, then figures (1) and (4) must also be similar.



We can obtain the answer figure for the missing portion by rotating the question figure by 180°.

So, it is clear that answer figure (b) will replace (?) to make the question figure complete.

42. (*a*) As figures (2) and (3) are similar to each other, then figures (1) and (4) must also be similar.



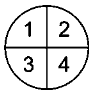
We can obtain the answer figure for the missing portion by rotating the question figure by 180°. So, it is clear that answer figure (a) *i.e.*, will replace (?) to make the question figure complete.

43. (*c*) As figures (2) and (3) are similar to each other, then figures (1) and (4) must also be similar.

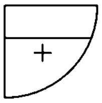
We can obtain the answer figure for the missing portion by rotating the question figure by 180°.

So, it is clear that answer figure (d) will replace (?) to make the question figure complete.

44. (*d*) Let the question figure be represents as



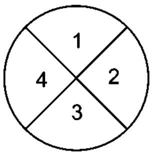
As figures (2) and (3) are similar to each other, then figure (1) and (4) must also be similar.



We can obtain the answer figure for the missing portion by rotating the question figure by 180°.

So, it is clear that answer figure (d) will replace (?) to make the question figure complete.

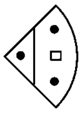
45. (*a*) Let us represent the four parts of the question figure as



We observe that figures represented by (2) and (4) are similar to each other. So, figures represented by (1) and (3) must also be similar.

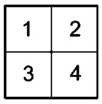
The answer figure for the missing portion can be obtained by rotating the question figure by 180° .

Clearly, answer figure (a), *i.e.,*

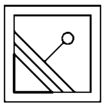


Completes the given question figure

Solutions (Q. Nos. 46-59) *In the each of the following solutions, let the question figure be represented (by its four parts) as*



46. (*b*) As figure (2) and (3) are similar to each other, then figure (1) and (4) must also be similar.



We can obtain the answer figure for the missing portion by rotating the original given figure by 180°.

Now, it is clear that answer figure (b) completes the question figure.

47. (*d*) As figure (2) and (3) are similar to each other, then figure (1) and (4) must also be similar.

We can obtain the answer figure for the missing portion by rotating the original given figure by 180°.

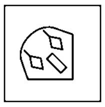
So, it is clear that answer figure (d) *i.e.,* will replace (?) to make the figure complete.

48. (*a*) Here, the lower two adjacent parts *i.e.,* (3) and (4) have designs which are laterally inverted forms of each other and the two right side adjacent parts *i.e.,* (2) and (4) have designs which are vertically inverted forms of each other. Then, the design in missing part *i.e.,* (1) will be the laterally inverted form of the design in part (2). So, from the answer options given it is clear that design given in option (a) is the correct laterally inverted form of (2) and it will replace the (?) to complete the pattern.

49. (*b*) All the four parts are similar except for a diagonal line passing through the parts (2) and (3). Also, each part comprises of a quarter circle in such a way that there is a semi-circle on a pair of opposite sides of the question figure. Clearly, answer figure (b) completes the pattern.

50. (*c*) Here, the upper two adjacent parts *i.e.,* (1) and (2) have designs which are laterally inverted forms of each other Then, the design in missing part *i.e.,* (4) will be the laterally inverted form of the design in part (3). So, from the answer options given it is clear that design given, in option (c) is the correct laterally inverted form of (3) and it will replace the (?) to complete the pattern.

51. (*d*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



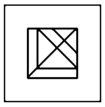
Now, it is clear that answer figure (d) completes the question figure.

52. (*d*) Here, the upper two adjacent parts *i.e.,* (1) and (2) have designs which are laterally inverted forms of each other. Then, the design in missing part *i.e.,* (3) will be the laterally inverted form of the design in part (4). So, from the answer options given it is clear that design given in option (d) is the correct laterally inverted form of (4) and it will replace the (?) to complete the pattern.

53. (*a*) Here, the upper two adjacent parts *i.e.,* (1) and (2) have designs which are laterally inverted forms of each other. Then, the design in missing part *i.e.,* (3) will be the laterally inverted form of the design in part (4). So, from the answer options given, it is clear that design given in option (a) is the correct laterally inverted form of (4) and it will replace the (?) to complete the pattern.

54. (*b*) Here, the lower two adjacent parts *i.e.,* (3) and (4) have designs which are laterally inverted form of each other. Then, the design in missing part *i.e.,* (1) will be the laterally inverted form of the design in part (2). So, from the answer options given, it is clear that design given in option (a) is the correct laterally inverted form of (2) and it will replace the (?) to complete the pattern.

55. (*a*) Here, all the three equal parts have similar design. So, we can obtain the answer figure for the missing portion by rotating the question figure by 90° clockwise.



Now, it is clear that answer figure (a) completes the question figure.

56. (*b*) Here, the upper two adjacent parts *i.e.,* (1) and (2) have designs which are laterally inverted forms of each other. Then, the design in missing part *i.e.,* (4) will be the laterally inverted form of the design in part (3). So,from the answer options given it is clear that design given in option (b) is the correct laterally inverted form of (3) and it will replace the (?) to complete the pattern.

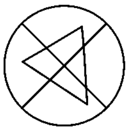
57. (*c*) Here, the lower two adjacent parts *i.e.,* (3) and (4) have designs which are laterally inverted forms of each other. Then, the design in missing part *i.e.,* (2) will be the laterally inverted form of the design in part (1). So, from the answer options given it is clear that design given in option (c) is the correct laterally inverted form of (1) and it will replace the (?) to complete the pattern.

58. (*b*) Here, the upper two adjacent parts *i.e.,* (1) and (2) have designs which are laterally inverted forms of each other. Then, the design in missing part *i.e.,* (3) will be the laterally inverted form of the design in part (4). So, from the answer options given it is clear that design given in option (b) is the correct laterally inverted form of (4) and it will replace the (?) to complete the pattern.

59. (*d*) Here, the upper two adjacent parts *i.e.,* (1) and (2) have designs which are laterally inverted forms of each other. Then, the design in missing part *i.e.,* (3) will be the laterally inverted form of the design in part (4). So, from the answer options given it is clear that design given in option (d) is the correct laterally inverted form of (4) and it will replace the (?) to complete the pattern.

60. (*a*) Here, by analysis we can observe that the given pattern is of a triangle.

So, it is clear that option (a) will replace the (?) to make the question figure complete as shown in the adjacent figure.



61. (*d*) Here, figure (4) is obtained by 90° anti-clockwise rotation of figure (1). Similarly, figure (3) can be obtained by 90° anti-clockwise rotation of figure (2).

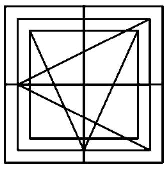
1	2
3	4

So, it is clear that option (d) will replace the (?) to make the question figure complete.

62. (*c*) From (1) to (2), the upper and the lower element get vertically inverted and swap places. Likewise, the left and right elements also interchange their respective positions the missing figure *i.e.,* (4) is obtained from (3) in a similar fashion.

63. (*d*) Here, by analysis we can observe that the given pattern is of two intersecting triangles inside the squares.

So, it is clear that option (d) will replace the (?) to make the figure complete as shown in the below figure.



64. (*a*) Here, by analysis we can find that only option (a) will replace the (?) to complete the design pattern of the figure.

6

Embedded Figures

A figure is said to be embedded in another figure when the second figure completely contains the first figure.

Different types of questions covered in this chapter are as follows

- Question Figure Embedded in Answer Figure
- Answer Figure Embedded in Question Figure

Questions based on Embedded Figures comprise of a question figure and four answer figures and it is asked to find the correct answer figure embedded in given question figure or the correct answer figure in which the given question figure is embedded.

These type of problems judge the visual ability and concentration level of a candidate. While attempting these questions, the candidates should visually judge the figure and try to find out the option in which this figure is embedded.

Let us consider following two figures

You are required to find out if Fig. (X) is embedded in Fig (Y).

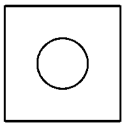


Fig. (X)

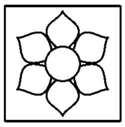
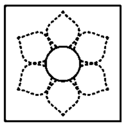


Fig. (Y)

By careful examination of Fig (Y), we find that Fig (X) is embedded in it, as shown in the below figure.



Types of problems which are asked in various competitive examinations are given below

Type 1 Question Figure Embedded in Answer Figure

In such questions, a question figure and four answer figures are given. The question figure is embedded in one of the answer figures. The candidate is required to find out that particular answer figure in which the question figure is embedded.

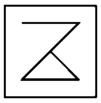
Memory *Add-ons*

- There may be some questions in which the question figure is not directly embedded in any of the answer figures. In these type of questions, change the orientation of question figure to find the correct answer figure.
- In some questions, the candidate will find the question figure embedded in two or more answer figures; then the most appropriate answer is that in which the question figure is embedded with least change in its orientation.

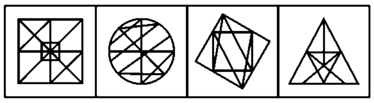
The following examples will give you a better idea about this type of questions

Directions (Example Nos. 1-6) In the following questions, a question figure and a set of four answer figures (a), (b), (c) and (d) are given. Find out that answer figure in which the question figure is embedded.

***Ex* 1** **Question Figure**

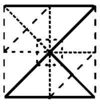


Answer Figures

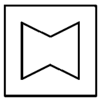


(a) (b) (c) (d)

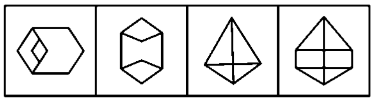
Sol. (*a*) Clearly, the question figure is embedded in answer figure (a). The portion which question figure occupies in the alternative figure has been shown in the below figure.



***Ex* 2** **Question Figure**



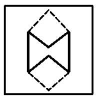
Answer Figures



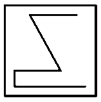
(a) (b) (c) (d)

[SSC (10+2) 2010]

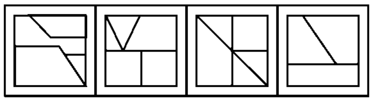
Sol. (*b*) Clearly, the question figure is embedded in answer figure (b). The portion which question figure occupies in the alternative figure has been shown in the below figure.



***Ex* 3** **Question Figure**



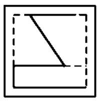
Answer Figures



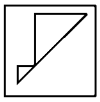
(a) (b) (c) (d)

[MAT 2009]

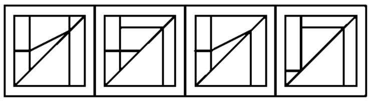
Sol. (*d*) Clearly, the question figure is embedded in figure (d) only.



***Ex* 4** **Question Figure**

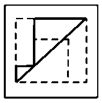


Answer Figures

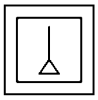


(a) (b) (c) (d)

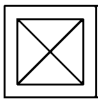
Sol. (*d*) Clearly, the question figure is embedded in figure (d) only.



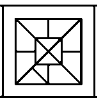
Ex **5** **Question Figure**



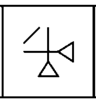
Answer Figures



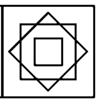
(a)



(b)



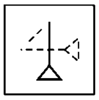
(c)



(d)

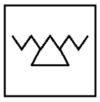
[SSC (CGL) 2009]

Sol. (*c*) Clearly, the question figure is embedded figure (c) only.

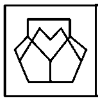


Here, we have selected vertical image and not horizontal image because we give preference to the one which depicts the question figure embedded with least change in its orientation.

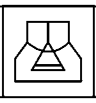
Ex **6** **Question Figure**



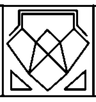
Answer Figures



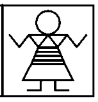
(a)



(b)

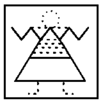


(c)



(d)

Sol. (*d*) Clearly, the question figure is embedded in figure (d) only.



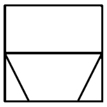
Practice Corner **6.1**

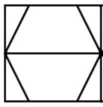
Build your Confidence...

Directions (Q. Nos. 1-44) In each of the following questions, find the answer figure in which question figure is embedded.

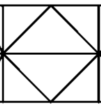
Question Figure **Answer Figures**

1.

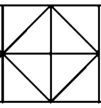




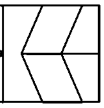
(a)



(b)



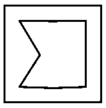
(c)

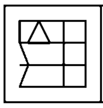


(d)

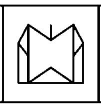
[SSC (LDC) 2005]

2.

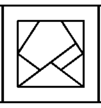




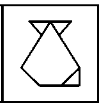
(a)



(b)

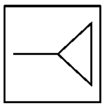


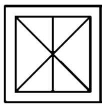
(c)



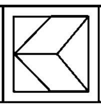
(d)

3.

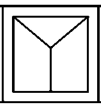




(a)



(b)



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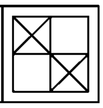
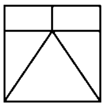
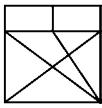


(d)

[SSC (CGL) 2008]

4.





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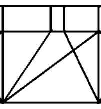

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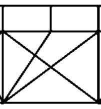

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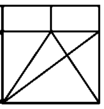
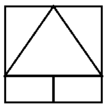
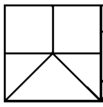


(d)

[RRB (ALP) 2007]

5.





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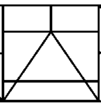

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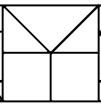

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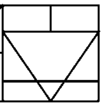
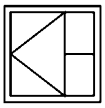


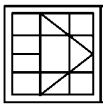
(d)

[MAT 2008]

Question Figure **Answer Figures**

6.





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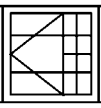

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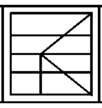

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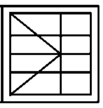
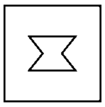
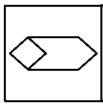


(d)

[SSC (Constable) 2009]

7.





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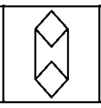

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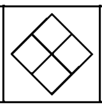

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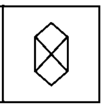

(d)

[RRB (GD) 2009]

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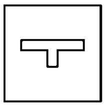

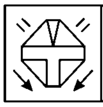

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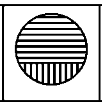

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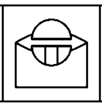

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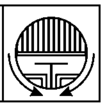
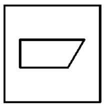
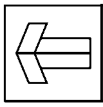


(d)

[SSC (CGL) 2006]

9.





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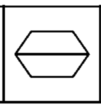

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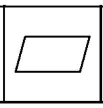

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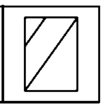
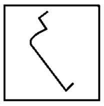
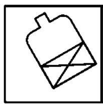


(d)

[SSC (CPO) 2008]

10.





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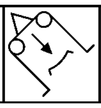

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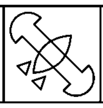

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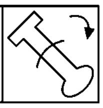
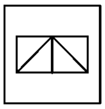


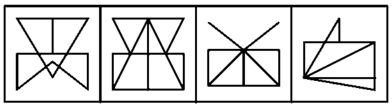
(d)

[SSC (CPO) 2008]

Question Figure **Answer Figures**

11.

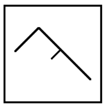


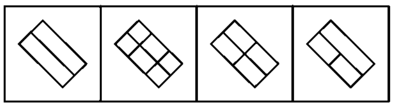


(a) (b) (c) (d)

[SSC (CPO) 2010]

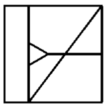
12.

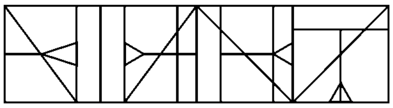




(a) (b) (c) (d) **[GIC 2009]**

13.

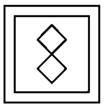


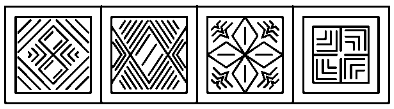


(a) (b) (c) (d)

[SSC (CGL) 2009]

14.

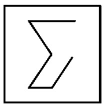


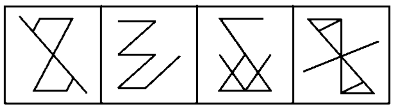


(a) (b) (c) (d)

[SSC (DEO) 2002]

15.

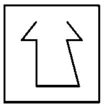


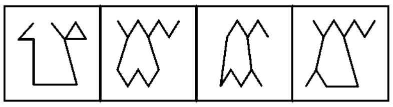


(a) (b) (c) (d)

[UP Police (Constable) 2009]

16.

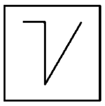


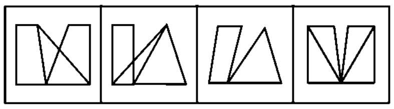


(a) (b) (c) (d)

[SSC (CPO) 2006]

17.

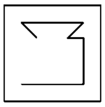


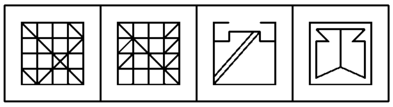


(a) (b) (c) (d)

[MAT 2006]

18.

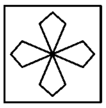


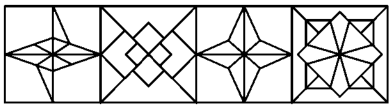


(a) (b) (c) (d)

[SSC (CGL) 2013]

19.

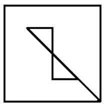


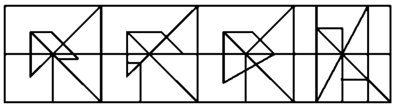


(a) (b) (c) (d)

Question Figure **Answer Figures**

20.

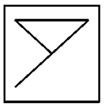


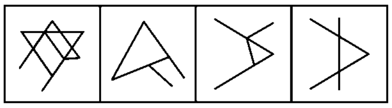


(a) (b) (c) (d)

[UP B. Ed. 2008]

21.

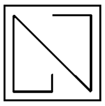


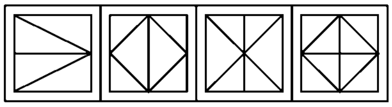


(a) (b) (c) (d)

[RRB (TC/CC) 2009]

22.

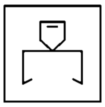


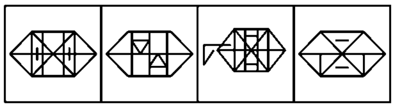


(a) (b) (c) (d)

[SSC (CGL) 2008]

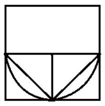
23.

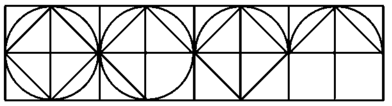




(a) (b) (c) (d)

24.

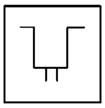


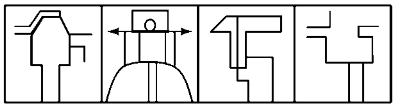


(a) (b) (c) (d)

[SSC (Steno) 2013]

25.

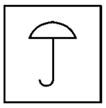


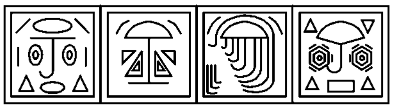


(a) (b) (c) (d)

[SSC (Multitasking) 2014]

26.

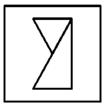


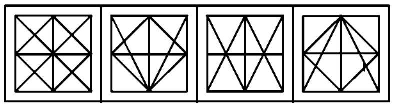


(a) (b) (c) (d)

[SSC (CPO) 2008]

27.

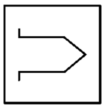


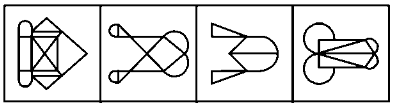


(a) (b) (c) (d)

[SSC (DEO) 2002]

28.

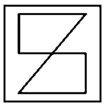


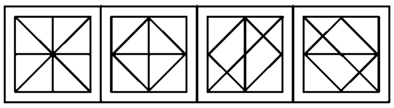


(a) (b) (c) (d)

Question Figure **Answer Figures**

29.

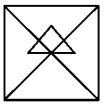


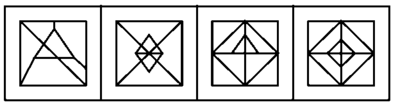


(a) (b) (c) (d)

[CMAT 2014, RRB (GG) 2007]

30.

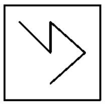


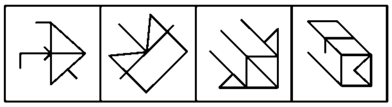


(a) (b) (c) (d)

[UP B. Ed. 2008]

31.

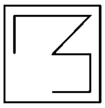


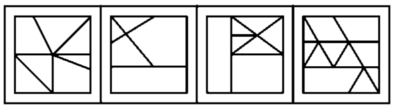


(a) (b) (c) (d)

[SSC (CPO) 2006]

32.

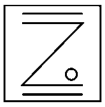


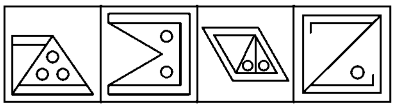


(a) (b) (c) (d)

[SSC (LDC) 2006]

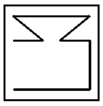
33.

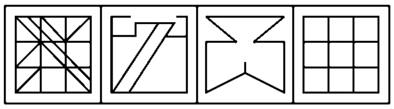




(a) (b) (c) (d)

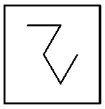
34.

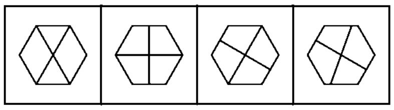




(a) (b) (c) (d)

35.

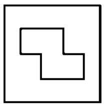


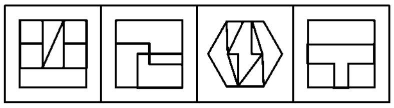


(a) (b) (c) (d)

[SSC (10+2) 2013]

36.



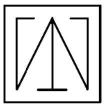


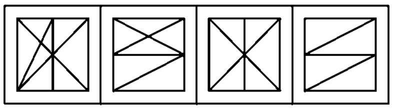
(a) (b) (c) (d)

[SSC (CPO) 2008]

Question Figure **Answer Figures**

37.

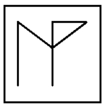


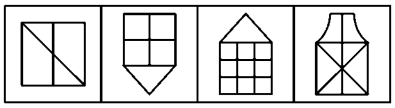


(a) (b) (c) (d)

[SSC (CPO) 2011]

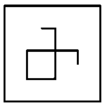
38.

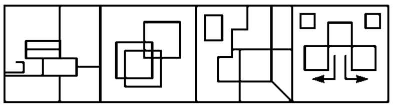




(a) (b) (c) (d) [GIC 2005]

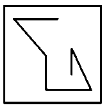
39.

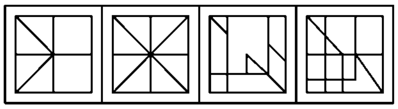




(a) (b) (c) (d) [GIC 2006]

40.

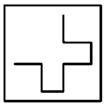


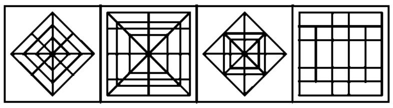


(a) (b) (c) (d)

[RRB (GD) 2009]

41.

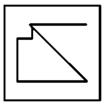


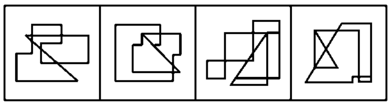


(a) (b) (c) (d)

[UP B. Ed. 2008]

42.

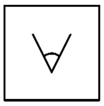


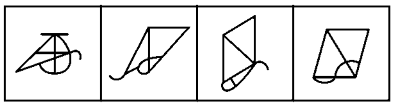


(a) (b) (c) (d)

[SSC (DEO) 2004]

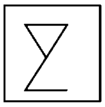
43.

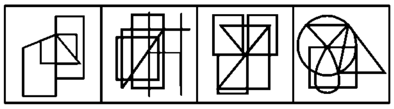




(a) (b) (c) (d)

44.





(a) (b) (c) (d)

[SSC (CGL) 2009]

Response & Interpretations **(6.1)**

1. (a)	**2.** (a)	**3.** (b)	**4.** (d)	**5.** (d)	**6.** (b)	**7.** (b)	**8.** (a)	**9.** (a)	**10.** (a)
11. (c)	**12.** (c)	**13.** (b)	**14.** (a)	**15.** (c)	**16.** (a)	**17.** (b)	**18.** (b)	**19.** (d)	**20.** (d)
21. (a)	**22.** (c)	**23.** (c)	**24.** (a)	**25.** (b)	**26.** (c)	**27.** (c)	**28.** (b)	**29.** (a)	**30.** (b)
31. (b)	**32.** (a)	**33.** (d)	**34.** (a)	**35.** (a)	**36.** (a)	**37.** (b)	**38.** (d)	**39.** (c)	**40.** (d)
41. (d)	**42.** (a)	**43.** (d)	**44.** (c)						

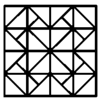
Type 2 Answer Figure Embedded in Question Figure

In such questions, a question figure and four answer figures (a), (b), (c) and (d) are given. Out of these answer figures, one figure is embedded in the question figure and that particular answer figure has to be found out.

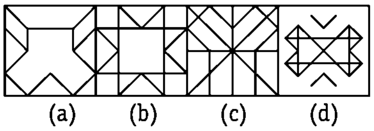
The following examples will give you a better idea about such type of questions

Directions (Example Nos. 7-11) In the following questions, a question figure is given with four answer figures (a), (b), (c) and (d). Find out that answer figure which is embedded in the question figure.

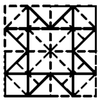
***Ex* 7** **Question Figure**



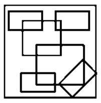
Answer Figures



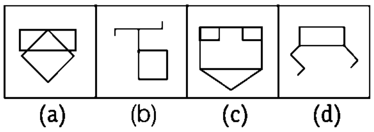
Sol. (*b*) Clearly, answer figure (b) is embedded in question figure and has been shown in the below figure.



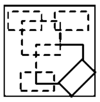
***Ex* 8** **Question Figure**



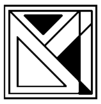
Answer Figures



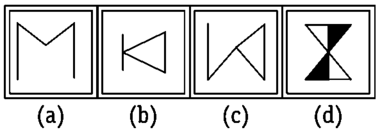
Sol. (*d*) Clearly, the answer figure (d) is embedded in question figure and has been shown in the below figure.



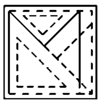
***Ex* 9** **Question Figure**



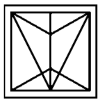
Answer Figures



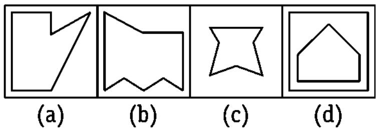
Sol. (*a*) Clearly, answer figure (a) is embedded in question figure and has been shown in the below figure.



***Ex* 10** **Question Figure**

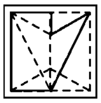


Answer Figures

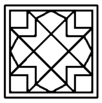


[SSC (Multitasking) 2013]

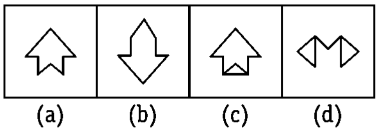
Sol. (*a*) Clearly, answer figure (a) is embedded in question figure and has been shown in the below figure.



***Ex* 11** **Question Figure**

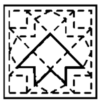


Answer Figures



[SSC (Constable) 2008]

Sol. (*a*) Clearly, answer figure (a) is embedded in question figure and has been shown in the adjacent figure.



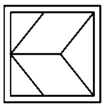
Practice Corner **6.2**

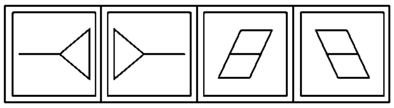
Build your Confidence...

Directions (Q. Nos. 1-22) In each of the following questions, choose the answer figure which is embedded in the question figure.

Question Figure **Answer Figures**

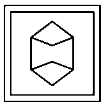
1.

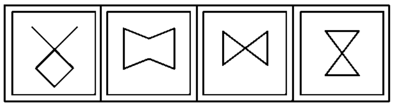




(a) (b) (c) (d)

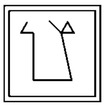
2.

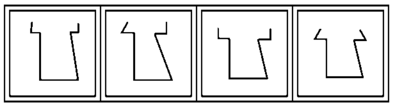




(a) (b) (c) (d)

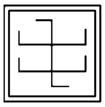
3.

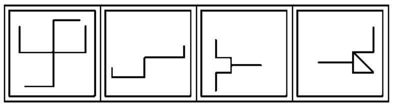




(a) (b) (c) (d)

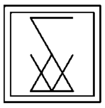
4.

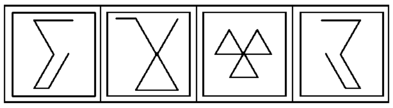




(a) (b) (c) (d)

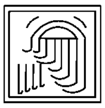
5.

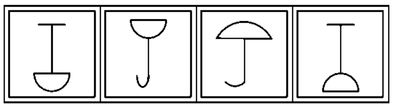




(a) (b) (c) (d)

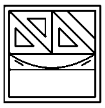
6.

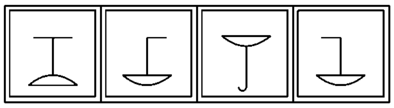




(a) (b) (c) (d)

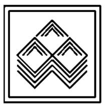
7.

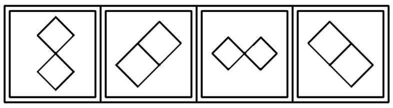




(a) (b) (c) (d)

8.



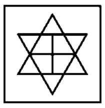


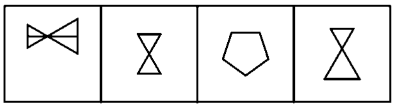
(a) (b) (c) (d)

[SSC (Steno) 2009]

Question Figure **Answer Figures**

9.

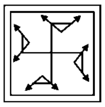


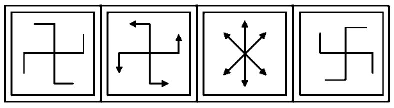


(a) (b) (c) (d)

[SSC (10+2) 2008]

10.





(a) (b) (c) (d)

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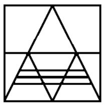

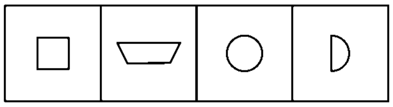

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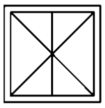

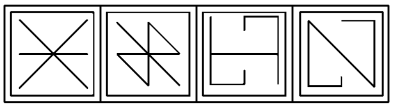

(a) (b) (c) (d)

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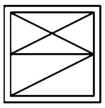
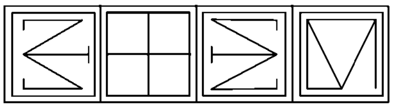
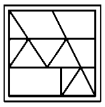


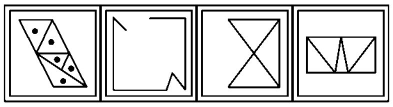


(a) (b) (c) (d)

[SSC (LDC & DEO) 2008]

14.





(a) (b) (c) (d)

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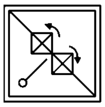

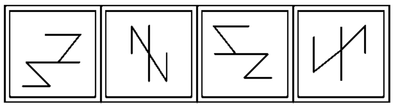

(a) (b) (c) (d)

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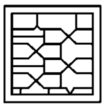
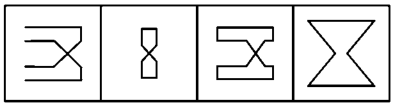


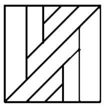


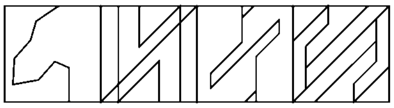
(a) (b) (c) (d)

[SSC (CGL) 2008]

Question Figure **Answer Figures**

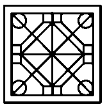
17.

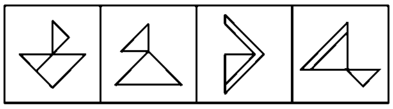



(a) (b) (c) (d)

[SSC (CGL) 2010]

18.

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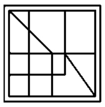
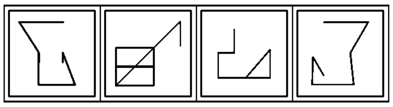
[SSC (CPO) 2008]

19.

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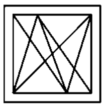
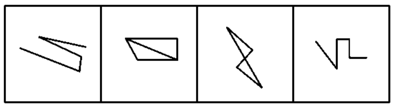
Question Figure **Answer Figures**

20.

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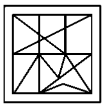

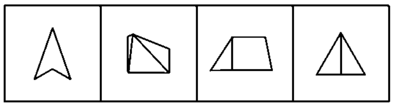
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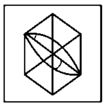
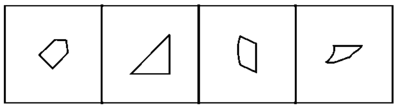



(a) (b) (c) (d)

[SSC (Multitasking) 2013]

Response & Interpretations **(6.2)**

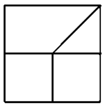
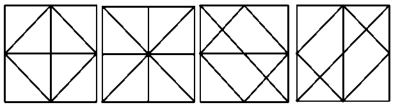
1. (a) **2.** (b) **3.** (d) **4.** (b) **5.** (a) **6.** (c) **7.** (d) **8.** (c) **9.** (b) **10.** (d)
11. (b) **12.** (d) **13.** (c) **14.** (b) **15.** (b) **16.** (a) **17.** (c) **18.** (a) **19.** (a) **20.** (c)
21. (c) **22.** (c)

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-31) In each of the following questions, choose the answer figure in which question figure is embedded.

Question Figure **Answer Figures**

1.


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[SSC (Multitasking) 2014]

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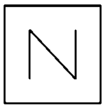
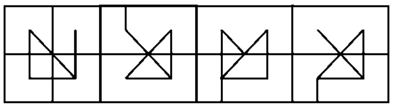
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[UP B. Ed. 2008]

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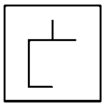
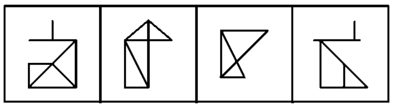
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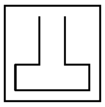
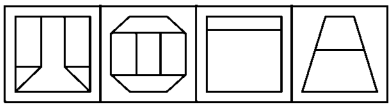
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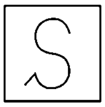
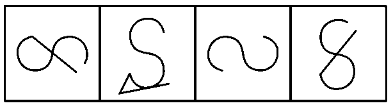
[SSC (CPO) 2010]

5.


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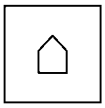
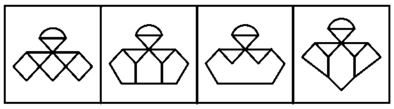
[SSC (LDC) 2011]

6.


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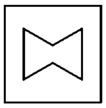
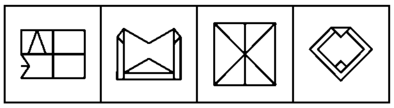
[SSC (Constable) 2012]

7.


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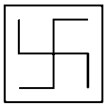
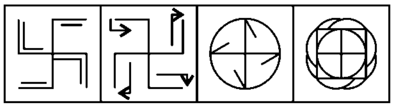
[SSC (FCI) 2012]

Question Figure **Answer Figures**

8.


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[SSC (FCI) 2012]

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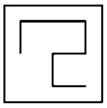
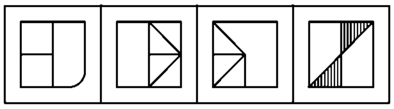
(a) (b) (c) (d)

[SSC (FCI) 2012]

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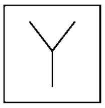
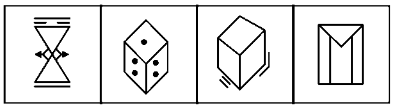
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[SSC (CPO) 2013]

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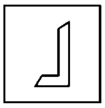
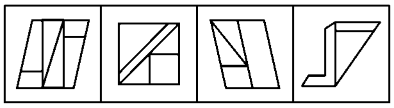
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[SSC (Constable) 2012]

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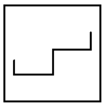
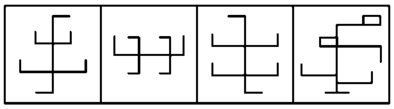
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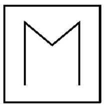
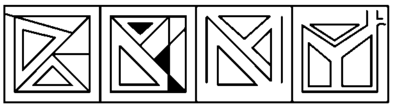
[RRB (ASM) 2008]

13.


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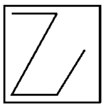
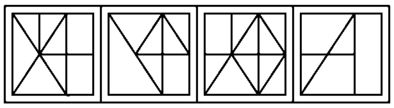
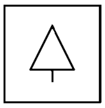
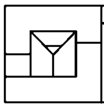


(a) (b) (c) (d)

Question Figure **Answer Figures**

15.

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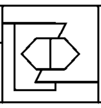
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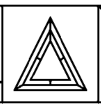
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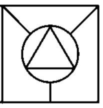
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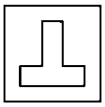

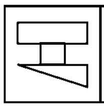
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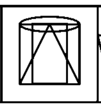
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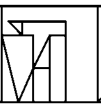
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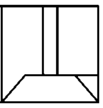
(d)

[SSC (LDC) 2008]

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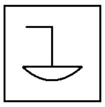

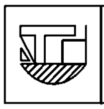
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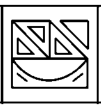
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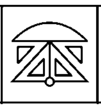
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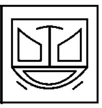
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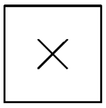

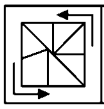
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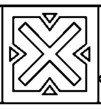
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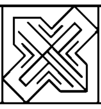
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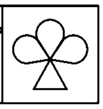
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[SSC (DEO) 2010]

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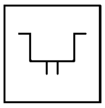

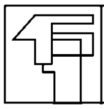
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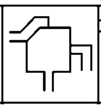
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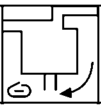
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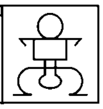
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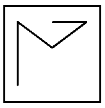
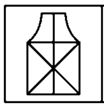
[MAT 2008]

20.

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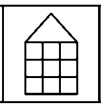
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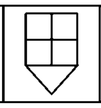
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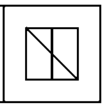
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[GIC 2007]

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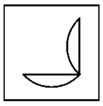

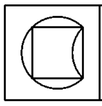
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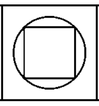
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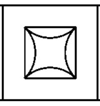
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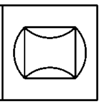
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[SSC (10+2) 2013]

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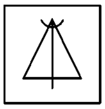

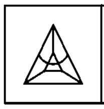
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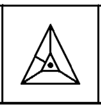
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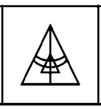
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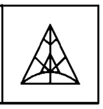
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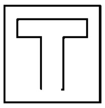

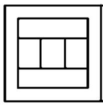
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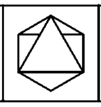
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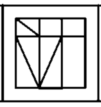
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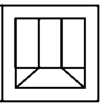
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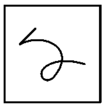
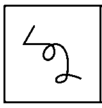
[UP Police (Constable) 2009]

Question Figure **Answer Figures**

24.

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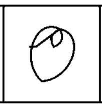
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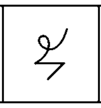
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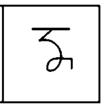
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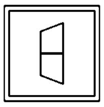

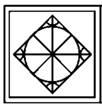
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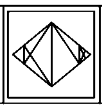
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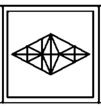
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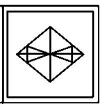
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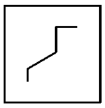
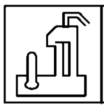
[SSC (CPO) 2013]

26.

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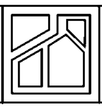
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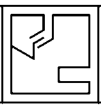
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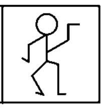
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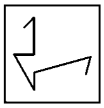
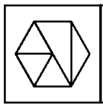
[UP Police (Constable) 2008]

27.

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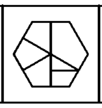
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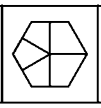
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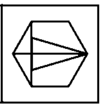
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[SSC (CGL) 2007]

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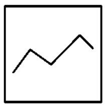

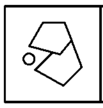
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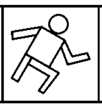
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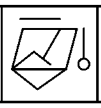
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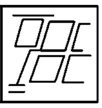
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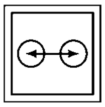

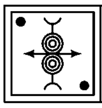
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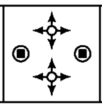
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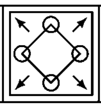
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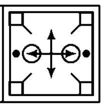
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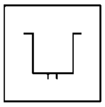

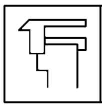
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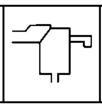
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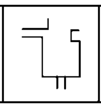
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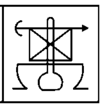
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[SSC (10+2) 2013]

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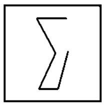

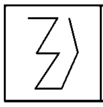
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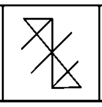
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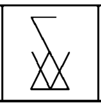
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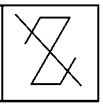
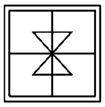
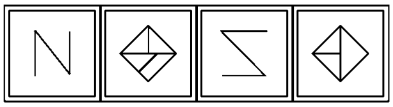

(d)

Directions (Q. Nos. 32-41) In each of the following questions, choose the answer figure which is embedded in the question figure.

Question Figure **Answer Figures**

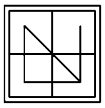
32.

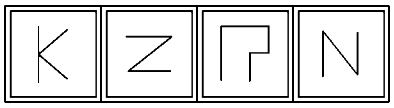




(a) (b) (c) (d)

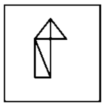
33.

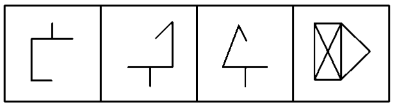




(a) (b) (c) (d)

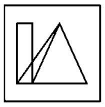
34.

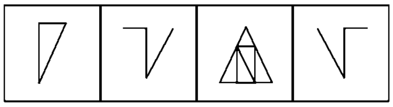




(a) (b) (c) (d)

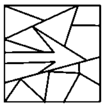
35.

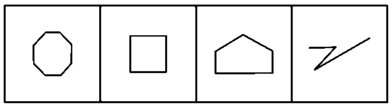




(a) (b) (c) (d)

36.



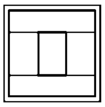


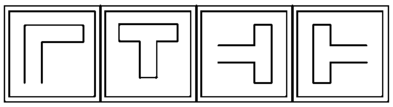
(a) (b) (c) (d)

[SSC (CGL) April 2014]

Question Figure **Answer Figures**

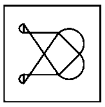
37.

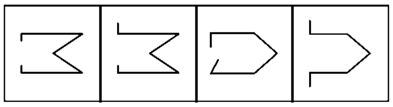




(a) (b) (c) (d)

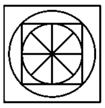
38.

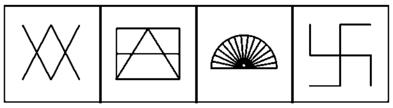




(a) (b) (c) (d)

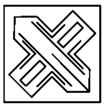
39.

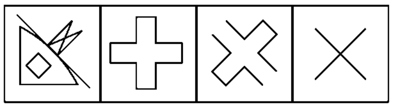




(a) (b) (c) (d)

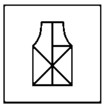
40.

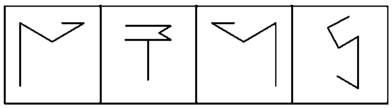




(a) (b) (c) (d)

41.





(a) (b) (c) (d)

Response & Interpretations (Master Exercise)

1. (b) **2.** (a) **3.** (b) **4.** (a) **5.** (b) **6.** (b) **7.** (b) **8.** (a) **9.** (b) **10.** (b)
11. (d) **12.** (c) **13.** (b) **14.** (c) **15.** (c) **16.** (c) **17.** (b) **18.** (c) **19.** (d) **20.** (a)
21. (a) **22.** (c) **23.** (c) **24.** (d) **25.** (c) **26.** (d) **27.** (d) **28.** (b) **29.** (d) **30.** (d)
31. (c) **32.** (c) **33.** (d) **34.** (a) **35.** (b) **36.** (d) **37.** (b) **38.** (d) **39.** (d) **40.** (c)
41. (a)

7

Cubes

A Cube is a three-dimensional solid object bounded by six square faces or surfaces, it can also be called as 'regular hexahedron'.

Different types of questions covered in this chapter are as follows

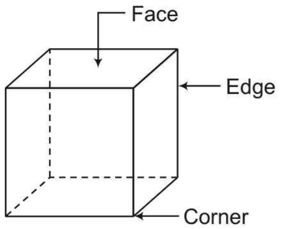
- Cutting of a Cube or Cuboid
- Counting of Blocks
- A Larger Cube/Cuboid is Painted and Cut

Cube

Cube is a three dimensional body having

- 6 surface/faces
- 8 corners
- 12 edges

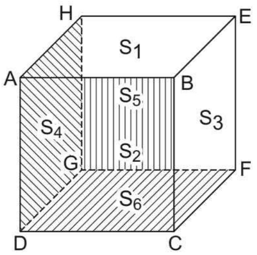
In a cube, Length = Breadth = Height (L = B = H)



Surface/Faces

Every cube has six faces out of which a maximum of 3 faces are visible at a time.

In the given figure, ABCD, BCFE, ABEH, ADGH, EFGH and CDGF are the six faces of the figure



ABEH ⇒ S_1
ABCD ⇒ S_2
BCFE ⇒ S_3
Visible faces

ADGH ⇒ S_4
EFGH ⇒ S_5
CDGF ⇒ S_6
Invisible faces

ABCD ⇒ Front face ⇒ S_2
EFGH ⇒ Back face ⇒ S_5
Faces opposite to each other

ABEH ⇒ Upper face ⇒ S_1
CDGF ⇒ Lower face ⇒ S_6
Faces opposite to each other

BCEF ⇒ Right face ⇒ S_3
ADGH ⇒ Left face ⇒ S_4
Faces opposite to each other

From the above facts it is clear that

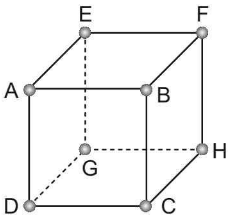
(i) Every face has four adjacent faces.
(ii) Adjacent faces are connected to each other.
(iii) Two adjacent faces meet at a single side and three face adjacent to each other meet at a single vertex.

Edges and Corners

A cube consists of 12 edges and 8 corners. Maximum 9 edges and 7 corners are visible at a time and rest edges and corners are not visible.

From the given cube

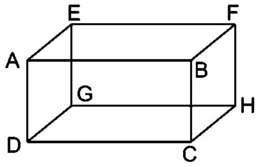
Visible Edges	**Visible Corners**	**Invisible Edges**	**Invisible Corners**
AB, BC, CD, DA AE, EF, FB, FH and CH	A, B, C, D, E, F and H	GD, GH and GE	G



Cuboid

Like cube it is three-dimensional body which possesses all the properties of a cube except equality of dimensions.
It means a cuboid has

- 6 faces (3 are visible and 3 are hidden at a time)
- 8 corners (only 7 are visible at a time)
- 12 edges (only 9 are visible at a time)
- Length breadth and height not all same.

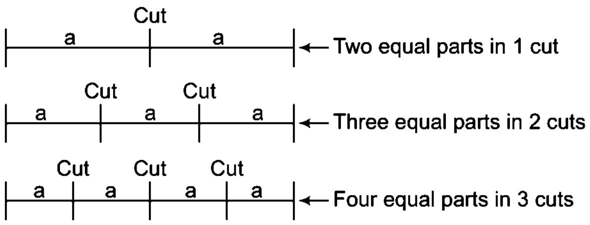


Several types of questions based on cubes are asked in various competitive exams. Based on their divergent nature, we have classified these into following types

Type 1 Cutting of a Cube or Cuboid

- When we cut a rod in two equal parts, then we cut it only once.
- Similarly, if a rod is divided into three equal parts, then 2 cuts are made.
- For 4 equal parts 3 cuts are made and so on.

Let us see



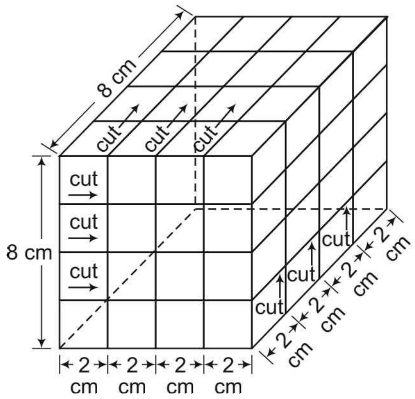
$\therefore$ For n equal parts, number of cuts = $(n - 1)$

Like a rod/stick, a cube can also be cut as per the rule given below

If each edge of a cube = 8 cm and it has to be cut into smaller cubes having each edge of 2 cm, then

Parts of each edge $(n) = \frac{8}{2} = 4$ and to divide into four parts, the cube will have to be cut into $(n - 1) = (4 - 1) = 3$ times from three sides.

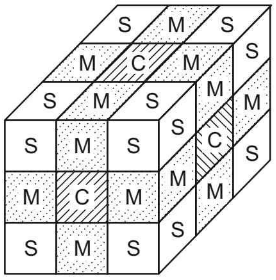
Let us see the following figure



Identification of smaller cubes when a larger cube is cut into smaller cubes

After cutting a cube, following type of smaller cubes are obtained

- Corner cubes = S (exist at each corner)
- Middle cubes = M (exist at the middle of each edge)
- Central cubes = C (exist at the middle of each face)
- Nuclear cube/Inner central cube = N (hidden and exist at the centre of the larger cube)



Finding number of cubes when a larger cube is cut into smaller cubes

If a larger cube is cut into smaller cubes of equal volume so that each edge is divided into n parts, then

Memory *Add-ons*

Number of smaller cubes so obtained = $(n)^3$

where, $n = \dfrac{\text{Edge of larger cube}}{\text{Edge of smaller cube}}$

- Number of inner central/nucleus cubes (N) = $(n-2)^3$
- Number of central cubes (C) = $6(n-2)^2$
- Number of middle cubes (M) = $12(n-2)$
- Number of corner cubes (S) = 8

e.g., If a larger cube of 10 cm edge is cut into smaller cubes of equal volumes having each edge of 2 cm, then

$$n = \frac{\text{Edge of larger cube}}{\text{Edge of smaller cube}} = \frac{10}{2} = 5$$

Number of smaller cubes = $(n)^3 = (5)^3 = 125$
Number of inner central/nucleus cubes (N) = $(n-2)^3 = (5-2)^3 = 27$
Number of central cubes (C) = $6(n-2)^2 = 6(5-2)^2 = 54$
Number of middle cubes (M) = $12(n-2) = 12(5-2) = 36$
Number of corner cubes (S) = 8

***Ex* 1** A cube has each side 6 cm. In how many smaller cubes of each side 1 cm can it be divided? **[SSC (CPO) 2010]**

(a) 36 (b) 12 (c) 18 (d) 216

Sol. (*d*) Each side of bigger cube will be divided into 6 parts

It means, $n = \dfrac{\text{Side of bigger cube}}{\text{Side of smaller cube}} = \dfrac{6}{1} = 6$

$\therefore$ Required number of smaller cubes = $(n)^3 = (6)^3 = 216$

***Ex* 2** A cube having 24 cm side is divided into 64 smaller cubes of equal volume. Find the side of smaller cubes?

(a) 5 cm (b) 6 cm (c) 3 cm (d) 4 cm

Sol. (*b*) Here, number of smaller cubes = $(n)^3 = 64 \Rightarrow n = \sqrt[3]{64} = 4$

$$n = \frac{\text{Side of bigger cube}}{\text{Side of smaller cube}} \Rightarrow 4 = \frac{24}{\text{Side of smaller cube}}$$

$\therefore$ Side of smaller cube $= \frac{24}{4} = 6\,\text{cm}$

***Ex* 3** If a cube of 12 cm side is divided into smaller cubes of 3 cm side, then

(i) find the total number of smaller cubes.

(a) 16 (b) 64 (c) 128 (d) 32

(ii) find the total number of corner (vertex) cubes.

(a) 16 (b) 12 (c) 8 (d) 4

(iii) what is the total number of middle cubes?

(a) 8 (b) 16 (c) 24 (d) 32

(iv) what is the total number of central cubes?

(a) 45 (b) 9 (c) 15 (d) 24

(v) find the total number of inner central cubes?

(a) 18 (b) 9 (c) 8 (d) 81

Sol. (i) (*b*) $n = \frac{\text{Side of bigger cube}}{\text{Side of smaller cube}} = \frac{12}{3} = 4$

$\therefore$ Total number of smaller cubes $= (n)^3 = (4)^3 = 64$

(ii) (c) As total number of corner cubes is always 8

(iii) (c) Number of middle cubes $= 12(n-2) = 12(4-2) = 12 \times 2 = 24$

(iv) (*d*) Total number of central cubes $= 6(n-2)^2 = 6(4-2)^2 = 6(2)^2 = 24$

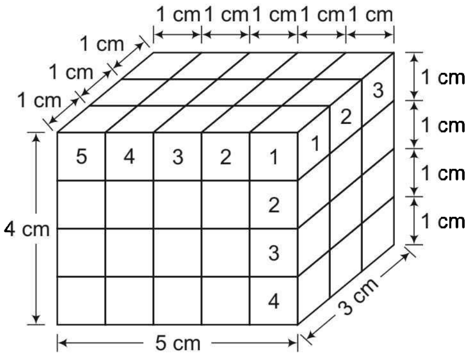
(v) (c) Total number of inner central cubes $= (n-2)^3 = (4-2)^3 = (2)^3 = 8$

Cutting of a Cuboid

When a painted cuboid is cut into smaller cubes of equal volume, then

$$\text{Total number of cubes} = \frac{\text{Volume of cuboid}}{\text{Volume of smaller cube}}$$

$$= \frac{\text{Length} \times \text{Breadth} \times \text{Height of cuboid}}{(\text{Side of smaller cube})^3}$$



In a cuboid,

Length = 5 cm
Breadth = 3 cm
Height = 4 cm

Then, total number of smaller cubes each having 1 cm side $= \frac{5 \times 3 \times 4}{(1)^3} = 60$

If, NL = Segments cut on length
NB = Segments cut on breadth
NH = Segments cut on height

Then, the total number of smaller cubes = NL × NB × NH

Ex 4 If a cuboid with length = 10 cm, breadth = 8 cm and height = 8 cm is cut into smaller cubes of edge 2 cm each, then find the number of smaller cubes.

(a) 60 (b) 80 (c) 64 (d) 96

Sol. (*b*) Total number of cubes $= \dfrac{l \times b \times h}{(\text{Side of smaller cube})^3} = \dfrac{10 \times 8 \times 8}{(2)^3} = \dfrac{10 \times 8 \times 8}{8} = 80$

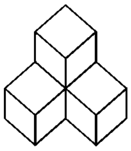
OR $NL = \dfrac{10}{2} = 5 \Rightarrow NB = \dfrac{8}{2} = 4 \Rightarrow NH = \dfrac{8}{2} = 4$

$\therefore$ Total number of cubes $= 5 \times 4 \times 4 = 80$

Type 2 Counting of Blocks

When the number of cubes (or blocks/cuboids) in a figure needs to be counted, the procedure is described with the help of the following illustrations.

Ex 5 Count the number of cubes in the given figure.

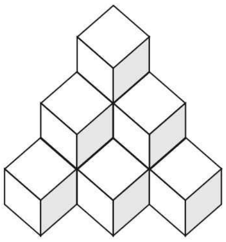


(a) 3 (b) 4 (c) 5 (d) 6

Sol. (*b*) It is clear from the figure, 1 column contains 2 cubes and 2 columns contain 1 cube each.

$\therefore$ Total number of cubes $= (1 \times 2) + (2 \times 1) = 2 + 2 = 4$

Ex 6 Count the number of cubes in the given figure. **[SSC (LDC & DEO) 2009]**



(a) 6 (b) 8 (c) 10 (d) 12

Sol. (*c*) Clearly, in the figure, 1 column contains 3 cubes, 2 columns contains 2 cubes each and 3 columns contains 1 cube each.

$\therefore$ Total number of cubes $= (1 \times 3) + (2 \times 2) + (3 \times 1)$

$= 3 + 4 + 3 = 10$

Practice Corner 7.1

Build your Confidence...

1. How many edges a cube/cuboid has? **[UP B.Ed. 2012]**

(a) 4 (b) 12 (c) 16 (d) 10

2. A cube/cuboid has always **[MAT 2010]**

(a) 8 corners (b) 6 faces
(c) 12 edges (d) All of these

3. How many pair of opposite faces a cube/cuboid has? **[MAT 2010]**

(a) 4 (b) 2
(c) 5 (d) None of these

4. How many adjacent faces, each face of a cube has? **[RRB (TC/CC) 2010]**

(a) 2 (b) 4 (c) 6 (d) 8

5. How many faces are hidden in a cube? **[UP B.Ed. 2012]**

(a) 4 (b) 1 (c) 2 (d) 3

6. How many edges are invisible in a cube?

(a) 5 (b) 4
(c) 2 (d) 3

7. How many hidden corners are there in a cube?
(a) 3 (b) 6 (c) 1 (d) 5

8. Which of the following statements is true?
(a) Length, breadth and height of cube are equal
(b) A cube is a three dimensional body
(c) A cube has 12 edges out of which only 9 are visible at a time
(d) All of the above

9. How many smaller cubes of 1 cm side can be formed with a solid cube of 3 cm side? **[SSC (CPO) 2010]**
(a) 3 (b) 6 (c) 9 (d) 27

10. How many times will a solid cube of 4 cm side be cut to obtain smaller cubes of 2 cm side? **[UP B.Ed. 2011]**
(a) 2 (b) 3 (c) 5 (d) 7

11. A solid cube is made using 64 small cubes. In how many small cubes two sides are seen? **[SSC (10+2) 2010]**
(a) 24 (b) 32 (c) 40 (d) 42

12. A cube of 25 cm side is divided into 125 smaller cubes of equal volume. Find the side of smaller cubes.
(a) 2 cm (b) 3 cm (c) 5 cm (d) 6 cm

Directions (Q. Nos. 13-19) Read the following information carefully to answer the questions that follow. **[CMAT 2010]**

A cube of 3 cm side is divided into smaller cubes of side 1 cm.

13. How many times will it be cut to obtain smaller cubes?
(a) 2 (b) 4 (c) 6 (d) 8

14. Find the total number of smaller cubes.
(a) 3 (b) 9 (c) 27 (d) 81

15. Find the total number of corner (vertex) cubes.
(a) 4 (b) 6 (c) 8 (d) 10

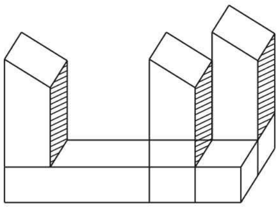
16. What will be the total number of middle cubes?
(a) 6 (b) 12 (c) 18 (d) 24

17. Find the total number of central cubes.
(a) 3 (b) 6 (c) 8 (d) 12

18. What is the total number of inner central cubes?
(a) 1 (b) 2 (c) 3 (d) 4

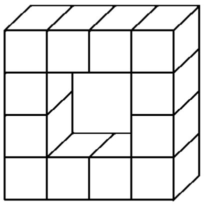
19. In how many parts will each edge (side) of bigger cube be divided?
(a) 1 (b) 2 (c) 3 (d) 4

20. Count the number of blocks in the given figure.



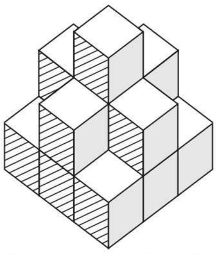
(a) 6 (b) 7
(c) 8 (d) 9

21. How many cubes are there in this diagram? **[SSC (10+2) 2012]**



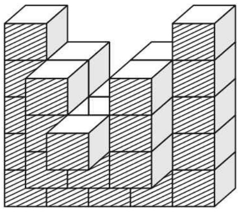
(a) 16 (b) 12 (c) 10 (d) 8

22. Count the number of cubes in the given figure.



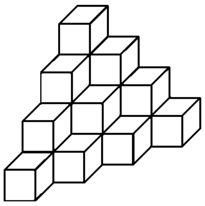
(a) 8 (b) 9 (c) 12 (d) 15

23. Count the number of cubes in the given figure.



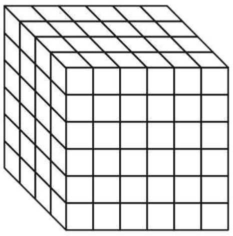
(a) 25 (b) 30 (c) 35 (d) 40

24. How many cubes are there in the group? **[SSC (CGL) 2013]**



(a) 10
(b) 16
(c) 18
(d) 20

25. How many cubes are there in this figure? **[SSC (DEO & LDC) 2012]**



(a) 69
(b) 180
(c) 144
(d) 84

Response & Interpretations **(7.1)**

1. (*b*) There are only 12 edges in a cube/cuboid.

2. (*d*) All options are correct

3. (*d*) A cube has 3 pair of opposite faces as it has 6 faces in total and each face has one opposite face.

4. (*b*) There are only 4 adjacent faces for each face of a cube.

5. (*d*) Hidden faces = 3

6. (*d*) A cube has 12 edges out of which 9 are visible
$\therefore$ Invisible edges $= 12 - 9 = 3$

7. (c) When a cube is seen from any direction, then at a time a maximum of only 7 corners are visible out of 8.
Hence, only 1 corner is hidden.

8. (*d*) All of the above

9. (*d*) Required number of smaller cubes

$$= \frac{\text{Volume of bigger cube}}{\text{Volume of smaller cube}} = \frac{(3)^3}{1^3} = (3)^3 = 27$$

10. (*b*) Required number of times

$$= \left(\frac{\text{Side of bigger cube}}{\text{Side of smaller cube}} - 1\right) \times 3$$

$$= \left(\frac{4}{2} - 1\right) \times 3 = (2 - 1) \times 3 = 3$$

11. (*a*) In 24 small cubes two sides would be seen.

12. (c) $\frac{\text{Volume of bigger cube}}{\text{Volume of smaller cube}} = \text{Number of smaller cubes}$

$$\Rightarrow \frac{25 \times 25 \times 25}{\text{Volume of smaller cube}} = 125$$

$$\Rightarrow \text{Volume of smaller cube} = \frac{25 \times 25 \times 25}{125} = 125$$

$$\therefore \text{Side of smaller cube} = \sqrt[3]{125} = 5\,\text{cm}$$

13. (c) Required number of cuts $= \left(\frac{\text{Side of bigger cube}}{\text{Side of smaller cube}} - 1\right) \times 3$

$$= \left(\frac{3}{1} - 1\right) \times 3 = 2 \times 3 = 6$$

14. (c) Number of smaller cubes $= \frac{\text{Volume of bigger cube}}{\text{Volume of smaller cube}}$

$$= \frac{(3)^3}{(1)^3} = (3)^3 = 27$$

15. (c) Corner cubes are always 8.

16. (*b*) Number of middle cubes $= 12(n - 2)$

$$= 12\left(\frac{3}{1} - 2\right)$$

$$= 12 \times 1 = 12$$

17. (*b*) Number of central cubes $= 6(n - 2)^2$

$$= 6 \times \left(\frac{3}{1} - 2\right)^2$$

$$= 6 \times 1 = 6$$

18. (*a*) Number of inner central cubes $= \left(\frac{3}{1} - 2\right)^3$

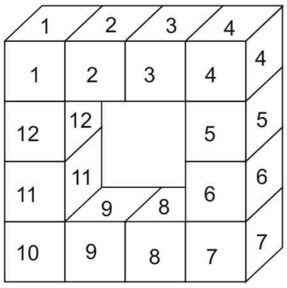
$$= (3 - 2)^3 = 1$$

19. (c) Required parts $= \frac{\text{Side of bigger cube}}{\text{Side of smaller cube}}$

$$= \frac{3}{1} = 3$$

20. (*b*) It is clear from the figure, that there are four blocks in the lower part close to the ground. Also, there are 3 blocks standing over the lower layer of blocks.
Thus, there are $4 + 3 = 7$ blocks in the given figure

21. (*b*)



So, there are 12 cubes in the given figure, which are illustrated above.

22. (*d*) From the given question figure, it is clear that
4 columns containing 1 cube each
1 column containing 3 cubes
4 columns containing 2 cubes each
$\therefore$ Total cubes $= (4 \times 1) + (1 \times 3) + (4 \times 2) = 4 + 3 + 8 = 15$

23. (*b*) From the given question figure, it is clear that
13 rows containing 1 cube each
7 rows containing 2 cubes each
1 rows containing 3 cubes
$\therefore$ Total cubes $= (13 \times 1) + (7 \times 2) + (1 \times 3)$
$= 13 + 14 + 3 = 30$

24. (*d*) From the given question figure, it is clear that
1 column containing 4 cubes
2 columns containing 3 cubes each
3 columns containing 2 cubes each
4 columns containing 1 cube each
$\therefore$ Total cubes $= (1 \times 4) + (2 \times 3) + (3 \times 2) + (4 \times 1)$
$= 4 + 6 + 6 + 4 = 20$

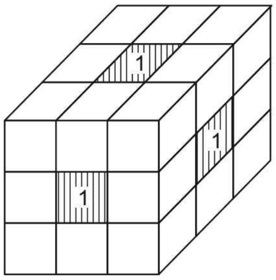
25. (*c*) Total number of cubes $= 6 \times 6 \times 4 = 144$

Type 3 A Larger Cube/Cuboid is Painted and Cut

In different exams, questions on painted cubes/cuboid are asked. In such questions, a larger cube/cuboid is painted with one, two, three, four, five or maximum six different colours. This larger cube/cuboid is then cut into smaller cubes of same or different dimensions and it is asked to determine the number of smaller cubes with one or more surfaces painted (with same or different colours).

1. Larger Cube Painted with a Single Colour

In this type, a larger cube is painted with single colour and then cuts are made to form smaller cubes.



I. Smaller cubes with one painted face

Such cubes are **central cubes** and they are neither attached with any edges nor corners. Let us see the given picture in which digit 1 represents such cubes. As digit 1 exits only once in each surface and there are 6 surfaces in a cube, hence number of smaller cubes having one surface painted must be 6. If a cube is made up of n^3 smaller cubes, then

Number of smaller cubes having one face painted on each surface layer of cube $= (n-2)^2$

As a cube has 6 surfaces, therefore number of such smaller cubes $= 6(n-2)^2$

In the given figure,

Each side of larger cube = 3 cm and each side of smaller cube = 1 cm

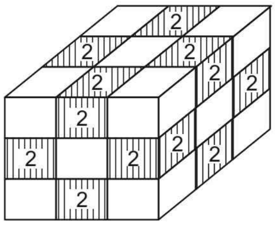
Then, $n = \dfrac{\text{Side of larger cube}}{\text{Side of smaller cubes}} = \dfrac{3}{1} = 3$

$\therefore$ Number of smaller cubes having one surface painted $= 6(n-2)^2 = 6(3-2)^2 = 6$

II. Smaller cubes with two painted faces

Such cubes are **middle cubes** and they are attached with edges (sides) as shown in the given figure by digit 2. As a cube has 12 edges, hence number of smaller cubes having 2 surfaces painted in a larger cube $= 12(n-2)$

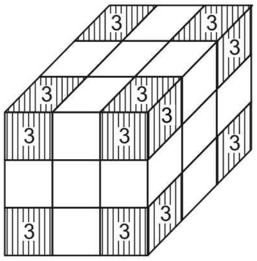
If $n = 3$, then



Number of such cubes $= 12(3-2) = 12 \times 1 = 12$

III. **Smaller cubes with three painted surfaces**

Such cubes are **corner cubes** which have been represented by digit 3 in the given figure. As a cube has 8 corners, hence number of smaller cubes having 3 faces painted is always 8.



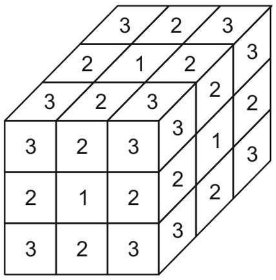
∴ Number of smaller cubes having three surface painted = 8

IV. **Smaller cubes with no painted surfaces**

Such cubes are **inner central or nucleus cubes** and they are invisible as shown in the figure.

As we know, number of inner central or nucleus cubes = $(n-2)^3$

If $n = 3$, then

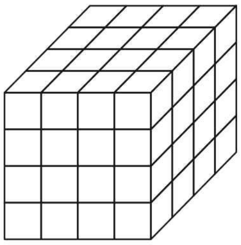


Number of smaller cubes having no surface painted = $(n-2)^3 = (3-2)^3 = 1$

Ex 7 A cube of side 4 cm is painted black on all of its surfaces and then divided into various smaller cubes of side 1 cm each. The smaller cubes so obtained are separated.

Sol. Total number of cubes so obtained = $\frac{4 \times 4 \times 4}{1 \times 1 \times 1} = 64$

Here, $n = \frac{\text{Side of bigger cube}}{\text{Side of a smaller cube}} = \frac{4}{1} = 4$



(i) Number of smaller cubes with three surfaces painted = 8

(ii) Number of smaller cubes with two surfaces painted = $(n-2) \times 12 = (4-2) \times 12 = 24$

(iii) Number of smaller cubes with one surface painted = $(n-2)^2 \times 6 = (4-2)^2 \times 6 = 4 \times 6 = 24$

(iv) Number of smaller cubes with no surface painted = $(n-2)^3 = (4-2)^3 = (2)^3 = 8$

Direction (Example No. 8) Read the information given below carefully and answer the questions that follow.

***Ex* 8** All the surfaces of a cube of 15 cm side are painted with red colour and then it is cut into smaller cubes of 3 cm side. Then,

(i) How many smaller cubes are there having only one surface painted with red colour?
(a) 18 (b) 24 (c) 36 (d) 54

(ii) How many smaller cubes are there having two surface painted with red colour?
(a) 8 (b) 24 (c) 36 (d) 54

(iii) How many smaller cubes are there having only three surface painted with red colour?
(a) 8 (b) 24 (c) 36 (d) 54

(iv) How many smaller cubes are there having 4 or more faces painted with red colour?
(a) 0 (b) 8 (c) 36 (d) 81

(v) How many smaller cubes are there having no surfaces painted with red colour?
(a) 3 (b) 9 (c) 27 (d) 81

(vi) How many smaller cubes are obtained from larger cube?
(a) 5 (b) 25 (c) 75 (d) 125

Sol. (i) (*d*) $n = \frac{\text{Side of bigger cube}}{\text{Side of smaller cube}} = \frac{15}{3} = 5$

$\therefore$ Required number of smaller cubes $= 6(n-2)^2 = 6(5-2)^2 = 6 \times 9 = 54$

(ii) (*c*) Required number of cubes $= 12(5-2) = 12 \times 3 = 36$

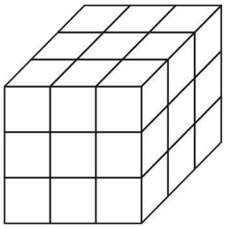
(iii) (*a*) As cubes with three faces painted are always 8.

(iv) (*a*) As number of cubes with four or more faces painted is 0.

(v) (*c*) Required number of cubes $= (n-2)^3 = (5-2)^3 = (3)^3 = 27$

(vi) (*d*) Total number of smaller cubes $= (n)^3 = (5)^3 = 125$

***Ex* 9** Little wooden cubes each with a side of one inch are put together to form a solid cube with a side of three inches. This big cube is then painted red all over on the outside. When the big cube is broken up into the original little ones, how many cubes will have paint on two sides? **[SSC (CGL) 2010]**



(a) 4 (b) 8 (c) 12 (d) 0

Sol. (*b*) A smaller cube with two sides painted is present on each of the 12 edges of the cube.

Therefore, total number of cubes having paint on two sides = 12

2. When a Larger Cube is Painted with More Than One Colour

In this type, a larger cube is painted with more than one colour and then cuts are made to form smaller cubes.

I. Smaller cubes with one painted face

When it is asked to determine the number of smaller cubes with one face painted with a particular colour, then first and foremost task is to find the number of faces of larger cube on which that particular colour is used. If this particular colour is L, then Number of smaller cubes with one surface painted = $(n-2)^2 \times$ Number of faces painted with colour L.

II. Smaller cubes with two painted faces

Such cubes are related with the edges. If larger cube is painted with more than one colour, then such cubes are obtained as below.

(i) **Smaller cubes having same colour on both the faces** Such cubes are obtained when two faces of the larger cube having the same colour have an edge in common. Hence, when the number of cubes with two faces painted with a particular colour is asked, then first and foremost task is to find the number of edges to which two faces (painted with a particular colour) of the larger cube are attached with.

Number of smaller cubes having both the faces painted with a particular colour $(x) = (n - 2) \times$ Number of edges to which colour x is attached.

(ii) **Smaller cubes having different colours on both the faces**

Number of smaller cubes having two faces painted with a colour (P) on one surface and another colour (Q) on another surface $= (n - 2) \times$ Number of edges to which colours P and Q are attached together.

III. Smaller cubes with three painted faces

Such smaller cubes are always 8 in number. In this case three situations arise

(i) If all the three surfaces have same colour.

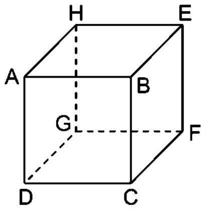
(ii) If all the three surfaces have different colours.

(iii) If one surface has one colour and two other surfaces have another colour.

Memory *Add-ons*

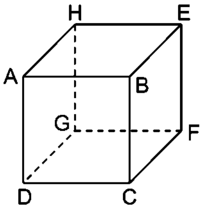
- If in a cube, one pair of opposite faces is painted with one colour (Red), another pair with second colour (Yellow) and third pair with third colour (Green), then no adjacent faces have same colour.

ABCD = EFGH = Red
BCFE = ADGH = Yellow
ABEH = CDGF = Green



- If in a cube, one pair of adjacent faces is painted with one colour, another pair with second colour and third pair with third colour, then no opposite faces have same colour.

ABCD = BCFE = Red
EFGH = ABEH = Yellow
ADGH = CDGF = Green



Following cases will help you to grap this concept in better manner

Case I If a cube is painted on all of its surfaces with different colours and then divided into various smaller cubes of equal size.

Ex 10 A cube of side 4 cm is painted black on one pair of opposite surfaces, blue on another pair of opposite surfaces and red on the remaining pair of opposite surfaces. The cube is now divided into smaller cubes of equal side of 1 cm each.

Sol. (i) Number of smaller cubes with three surfaces painted = 8 (these smaller cubes will have all three surfaces painted with different colours—blue, black and red).

(ii) Number of smaller cubes with two surfaces painted = 24

(a) Number of cubes with two surfaces painted with black and blue colours = 8

(b) Number of cubes with two surfaces painted with blue and red colours = 8

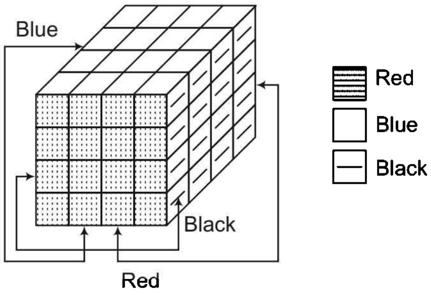
(c) Number of cubes with two surfaces painted with black and red colours = 8

(iii) Number of smaller cubes with one surface painted = 24
and out of these,

(a) Number of cubes with one surface painted with black colour = 8

(b) Number of cubes with one surface painted with blue colour = 8

(c) Number of cubes with one surface painted with red colour = 8



Ex **11** Two adjacent faces of a solid cube are painted in red, opposite of these adjacent faces are painted in black while the remaining faces are painted in green and then this painted cube is cut into 64 smaller cubes. Solve the following questions based on this information.

(i) How many cubes have no surface painted?
(a) 2 (b) 4 (c) 8 (d) 16

(ii) How many cubes have only one surface painted?
(a) 18 (b) 24 (c) 36 (d) 48

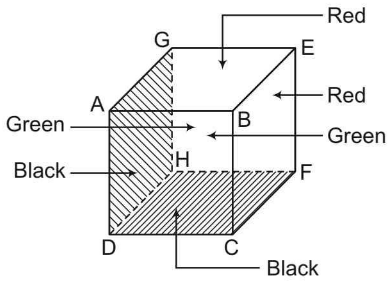
(iii) How many cubes have two faces painted?
(a) 18 (b) 24 (c) 36 (d) 48

(iv) How many cubes have three faces painted?
(a) 8 (b) 16 (c) 24 (d) 32

(v) How many cubes have red colour on one face and black colour on the opposite face?
(a) 0 (b) 8 (c) 24 (d) 36

(vi) How many cubes have red or black colour on two adjacent faces?
(a) 2 (b) 4 (c) 6 (d) 8

Sol.



ABEG = Red
BCFE = Red
CDHF = Black
ADHG = Black
ABCD = Green
EFHG = Green

Total number of smaller cubes = $(n)^3 \Rightarrow 64 = (n)^3$

$\therefore \quad n = \sqrt[3]{64} = 4$

(i) (*c*) Number of smaller cubes having no faces painted = $(n-2)^3 = (4-2)^3 = (2)^3 = 8$

(ii) (*b*) Number of smaller cubes having one face painted = $6(n-2)^2 = 6(4-2)^2$
$= 6 \times (2)^2 = 6 \times 4 = 24$

(iii) (*b*) Number of smaller cubes having two faces painted $= 12(n-2) = 12(4-2)$
$= 12 \times 2 = 24$

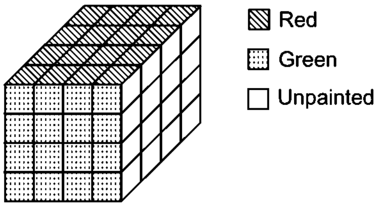
(iv) (*a*) As three faces painted cubes are always 8.

(v) (*a*) As there are no such cubes.

(vi) (*d*) There are 8 cubes which have red or black colour on its adjacent faces *i.e.*, 4 cubes on edge BE and 4 cubes edge DH.

Case II If a cube is painted on its surfaces in such a way that one pair of opposite surfaces is left unpainted.

Ex **12** A cube of side 4 cm is painted red on one pair of opposite surfaces, green on another pair of opposite surfaces and one pair of opposite surfaces is left unpainted. Now, the cube is divided into 64 smaller cubes of side 1 cm each.



(i) Number of smaller cubes with three surfaces painted = 0

(because each smaller cube at the corner is attached to a surface which is unpainted).

(ii) Number of smaller cubes with two surfaces painted

= Number of cubes present at the corners + Number of middle cubes present at 4 edges = $8 + (n - 2) \times 4$

$\Rightarrow 8 + 8 = 16$

(iii) Number of smaller cubes with one surface painted

= Number of cubes present at the 8 edges + Number of cubes present at the four surfaces

$= (n - 2) \times 8 + (n - 2)^2 \times 4 = 2 \times 8 + 4 \times 4 \Rightarrow 16 + 16 = 32$

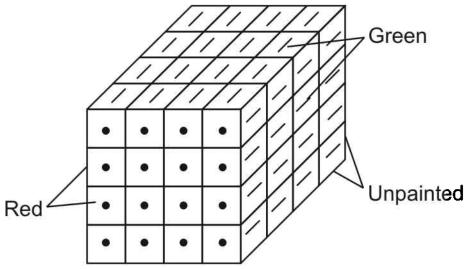
(iv) Number of smaller cubes with no side painted = Number of central cubes on the two unpainted surfaces + Number of cubes present inside the cube

$= (n - 2)^2 \times 2 + (n - 2)^3 = 4 \times 2 + (2)^3 \Rightarrow 8 + 8 = 16$

Case III If a cube is painted on its surfaces in such a way that one pair of adjacent surfaces is left unpainted.

***Ex* 13** **A cube of side 4 cm is painted red on one pair of adjacent surfaces, green on another pair of other adjacent surfaces and two adjacent surfaces are left unpainted. Now, the cube is divided into 64 smaller cubes of side 1 cm each.**

(i) Number of smaller cubes with three surfaces painted = Number of smaller cubes at two corners = 2



(ii) Number of smaller cubes with two surfaces painted = Number of smaller cubes at four corners + Number of smaller middle cubes at 5 edges

$= 4 + (n - 2) \times 5 \Rightarrow 4 + 2 \times 5 = 4 + 10 = 14$

(iii) Number of smaller cubes with one surface painted = Number of smaller central cubes at four surfaces + Number of smaller middle cubes at 6 edges + Number of smaller cubes at two corners

$= (n - 2)^2 \times 4 + (n - 2) \times 6 + 2 = 4 \times 4 + 2 \times 6 + 2 = 16 + 12 + 2 = 30$

(iv) Number of smaller cubes with no surface painted = Number of smaller cubes from inside the big cube + Number of central cubes at two surfaces + Number of middle cubes at one edge

$= (n - 2)^3 + (n - 2)^2 \times 2 + (n - 2) = (2)^3 + (2)^2 \times 2 + 2 = 8 + 8 + 2 = 18$

The cases discussed above will help you solving questions based on painted cubes.

3. When a Cuboid is Painted and Cut

In this type, a cuboid is painted with one or more colours and then cut into smaller cubes.

If segments have been made on each side of the painted cuboid, then

NL = Segments cut on length
NB = Segments cut on breadth
NH = Segments cut on height

(i) Number of smaller cubes having four or more faces painted = 0

(ii) Number of smaller cubes having 3 faces painted = 8

(iii) Number of smaller cubes having 2 faces painted = 4 (NL − 2) + 4 (NB − 2) + 4 (NH − 2)

= 4 [(NL − 2) + (NB − 2) + (NH − 2)]

(iv) Number of smaller cubes having one face painted

= 2 (NL − 2) (NB − 2) + 2 (NB − 2) (NH − 2) + 2(NL − 2) (NH − 2)

= 2 [(NL − 2) (NB − 2) + (NB − 2) (NH − 2) + (NL − 2) (NH − 2)]

(v) Number of smaller cubes having no faces painted = (NL − 2) (NB − 2) (NH − 2)

***Ex* 14** If in a painted cuboid, length = 20 cm, breadth = 18 cm and height = 16 cm and each smaller cube obtained after cutting this cuboid has volume = 8 cm^3, and the cubes so obtained are separated, then

(i) Side of each smaller cube = $\sqrt[3]{8} = 2$ cm

(ii) Number of segments on length (NL) = $\frac{20}{2} = 10$

Number of segment on breadth (NB) = $\frac{18}{2} = 9$

Number of segments on height (NH) = $\frac{16}{2} = 8$

(iii) Total number of smaller cubes = NL × NB × NH

$= 10 \times 9 \times 8 = 720$

(iv) Number of smaller cubes having four or more faces painted = 0

(v) Number of smaller cubes having 3 faces painted = 8

(vi) Number of smaller cubes having 2 faces painted = $4\,(NL-2) + 4\,(NB-2) + 4\,(NH-2)$

$= 4(10-2) + 4(9-2) + 4(8-2)$

$= 4(8) + 4(7) + 4(6) = 32 + 28 + 24 = 84$

(vii) Number of smaller cubes having only one face painted

$= 2\,(NL-2)\,(NB-2) + 2\,(NB-2)\,(NH-2) + 2\,(NL-2)\,(NH-2)$

$= 2\,(10-2)\,(9-2) + 2\,(9-2)\,(8-2) + 2\,(10-2)\,(8-2)$

$= (2 \times 8 \times 7) + (2 \times 7 \times 6) + (2 \times 8 \times 6) = 112 + 84 + 96 = 292$

(viii) Number of smaller cubes having no faces painted = $(NL-2)\,(NB-2)\,(NH-2)$

$= (10-2)\,(9-2)\,(8-2) = 8 \times 7 \times 6 = 336$

Practice Corner **7.2**

Build your Confidence...

1. A solid cube has been formed with 64 smaller cubes. How many smaller cubes are completely invisible? **[SSC (10+2) 2010]**

(a) 2 (b) 4 (c) 6 (d) 8

2. A cube has to be painted in such a way that there is no similar colour on adjacent faces. How many colours are needed for this?

(a) 3 (b) 4 (c) 6 (d) 2

3. All the faces of a cube are painted in blue and then it is divided into 27 smaller cubes. How many smaller cubes have only one face painted? **[UP B.Ed. 2012]**

(a) 0 (b) 6 (c) 8 (d) 18

4. A bigger cube of 3 inch side is formed by keeping together smaller cubes of 1 inch side. All the faces of this bigger cube is painted red. When the bigger cube is divided into original smaller cubes, then how many smaller cubes have two faces painted? **[SSC (10+2) 2010]**

(a) 4 (b) 8 (c) 12 (d) 0

5. All the faces of a cube having side 5 cm are painted green and then it is divided into smaller cubes of 1 cm side. How many smaller cubes have three faces painted with green?

(a) 4 (b) 8 (c) 12 (d) 24

6. Six faces of a cube are painted as below

(i) Red opposite to black.
(ii) Green in between red and black.
(iii) Blue adjacent to white.
(iv) Brown adjacent to blue.
(v) Bottom face with red.

Find the colour opposite to brown. **[SSC (CGL) 2010]**

(a) White (b) Red
(c) Green (d) Blue

7. A painted cube having 25 cm side is divided into smaller cube of 5 cm side. How many smaller cube have atleast two faces painted?

(a) 40 (b) 44
(c) 48 (d) 50

8. A solid cube is divided into 27 smaller cubes of equal volume. If two opposite faces of this bigger cube are painted with different colours and remaining faces are left unpainted, then how many smaller cubes are obtained which have no faces painted?

(a) 1
(b) 9
(c) 27
(d) 36

9. A solid cube is formed with 27 smaller cubes. One pair of opposite faces of this cube is painted red, another pair is painted yellow and the third pair of opposite faces is painted white. How many smaller cubes are painted yellow and white only? **[SSC (CPO) 2010]**

(a) 4 (b) 8 (c) 12 (d) 16

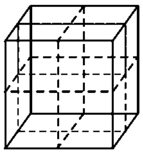
10. Pair of opposite faces of a solid cube having sides 3 cm are painted black, blue and yellow, respectively. After the painting this cube is divided into smaller cubes of side 1 cm. How many smaller cubes have only one face painted? **[UP B.Ed. 2008]**

(a) 4 (b) 6 (c) 9 (d) 12

11. A solid cube is formed with 27 smaller cubes. One pair of opposite faces of this cube is painted red, another pair is painted yellow and the third pair of opposite faces is painted white. How many smaller cubes have two faces painted?

(a) 8 (b) 12 (c) 16 (d) 24

12. A cube which is painted red on the outer surface is of 2 inches height, 2 inches wide and 2 inches across. If it is cut into one inch cubes as shown by dotted lines, then indicate the number of cubes which are painted red only on two sides? **[SSC (CGL) 2013]**



(a) 8 (b) 0 (c) 4 (d) 6

Directions (Q. Nos. 13-16) Read the following information carefully and answer the questions given below.

A cube is coloured red on all of its faces. It is then cut into 64 smaller cubes of equal size. The smaller cubes so obtained are now separated.

13. How many smaller cubes have no face coloured?

(a) 24 (b) 16 (c) 8 (d) 10

14. How many smaller cubes will have atleast two surfaces painted with red colour?

(a) 4 (b) 8 (c) 32 (d) 24

15. How many smaller cubes have two surfaces painted with red colour?

(a) 24 (b) 8 (c) 12 (d) 20

16. How many smaller cubes have only 3 surfaces painted with red colour?

(a) 0 (b) 12
(c) 24 (d) 8

Directions (Q. Nos. 17-22) Read the following information carefully and answer the questions given below.

A cube is painted red on two adjacent surfaces and black on the surfaces opposite to red surfaces and green on the remaining faces. Now, the cube is cut into 64 smaller cubes of equal size.

17. How many smaller cubes have only one surface painted?

(a) 8 (b) 16 (c) 24 (d) 32

18. How many smaller cubes will have no surface painted?

(a) 0 (b) 4 (c) 8 (d) 16

19. How many smaller cubes have less than three surfaces painted?

(a) 8 (b) 24 (c) 28 (d) 48

20. How many smaller cubes have three surfaces painted?

(a) 4 (b) 8 (c) 16 (d) 24

21. How many smaller cubes with two surfaces painted have one face green and one of the adjacent faces black or red?

(a) 8 (b) 16 (c) 24 (d) 28

22. How many smaller cubes have atleast one surface painted with green colour?

(a) 8 (b) 24 (c) 32 (d) 56

Directions (Q. Nos. 23-27) Read the following information carefully and answer the questions given below.

The outer border of width 1 cm of a cube with side 5 cm is painted yellow on each side and the remaining space enclosed by this 1 cm path is painted pink. This cube is now cut into 125 smaller cubes of each side 1 cm. The smaller cubes so obtained are now separated.

23. How many smaller cubes have all the surfaces uncoloured?

(a) 0 (b) 9 (c) 18 (d) 27

24. How many smaller cubes have three surfaces coloured yellow?

(a) 2 (b) 4 (c) 8 (d) 10

25. How many smaller cubes have atleast two surfaces coloured yellow?

(a) 24 (b) 44 (c) 48 (d) 96

26. How many smaller cubes have one face coloured pink and an adjacent face yellow?

(a) 0 (b) 1
(c) 2 (d) 4

27. How many smaller cubes have atleast one face coloured?

(a) 27 (b) 98
(c) 48 (d) 121

Directions (Q. Nos. 28-32) Read the following information carefully and answer the questions given below. **[LIC (ADO) 2010]**

There is a solid cuboid, two opposite faces of it are painted black, two opposite faces are painted red and remaining faces are painted green. After painting, this cuboid is divided into 72 cubes so that 64 cubes of smaller size and 8 cubes of bigger size could be obtained. Bigger cubes have no face black.

28. How many cubes have only one face painted?
(a) 8 (b) 16 (c) 20 (d) 24
(e) None of these

29. How many cubes have only two faces painted?
(a) 8 (b) 16 (c) 24 (d) 32
(e) None of these

30. How many cubes have 3 faces painted?
(a) 0 (b) 4 (c) 8 (d) 24
(e) None of these

31. How many cubes have two or more faces painted?
(a) 16 (b) 32 (c) 48 (d) 40
(e) None of these

32. How many cubes have no faces painted?
(a) 4 (b) 8 (c) 16 (d) 32
(e) None of these

Directions (Q. Nos. 33-38) Read the following information carefully and answer the questions given below.

A solid cube has been painted yellow, blue and black on the pair of opposite surfaces. The cube is then cut into 36 smaller cubes such that 32 cubes are of the same size while 4 others are of bigger size. Also, no face of any of the bigger cube is painted blue.

33. How many cubes have atleast one face painted black?
(a) 20 (b) 8 (c) 16 (d) 32

34. How many cubes have only one face painted?
(a) 0 (b) 4 (c) 8 (d) 12

35. How many cubes have only two faces painted?
(a) 24 (b) 20 (c) 16 (d) 12

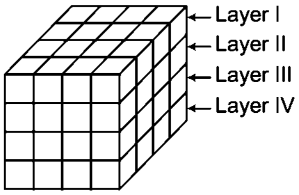
36. How many cubes have two or more faces painted?
(a) 36 (b) 20 (c) 28 (d) 24

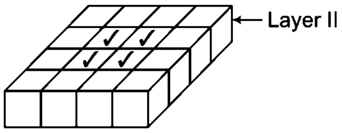
37. How many cubes have only three faces painted?
(a) 8 (b) 4 (c) 2 (d) 0

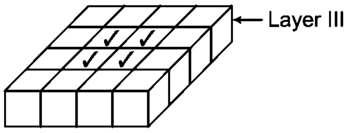
38. How many painted cubes do not have any of their faces painted yellow?
(a) 0 (b) 4
(c) 8 (d) 16

Response & Interpretations (7.2)

1. (*d*)







From the figures, it is clear that number of invisible cubes

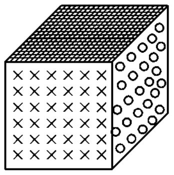
= 4 (in II layer) + 4 (in III layer) = 8

or Number of inner central cubes = $(n-2)^3 = (4-2)^3$

$= 2^3 = 8$

$(\because n = \sqrt[3]{64} = 4)$

2. (*a*) Clearly, when opposite faces are painted with different colours, then colours on adjacent faces will be different.
As we know that,



Number of pairs of opposite faces = 3

∴ Required number of colours = 3

3. (*b*) As we know that, when all the faces of a cube are painted with a single colour, then central cubes have only one face painted.

∴ Required number of central cubes = $6(n-2)^2$

$= 6(3-2)^2$

$= 6 \quad (\because n = \sqrt[3]{27} = 3)$

4. (*c*) As we know that, when all the faces of a cube are painted with a single colour, then smaller cubes with only two faces painted are the middle cubes present at the edges.

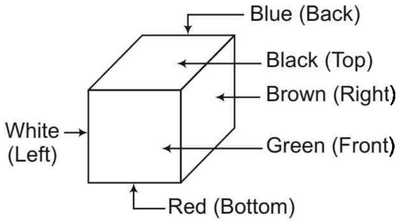
∴ Number of middle cubes = $12(n-2) = 12(3-2)$

$= 12 \times 1 = 12 \quad (\text{here, } n = 3)$

5. (*b*) Number of cubes having three faces painted

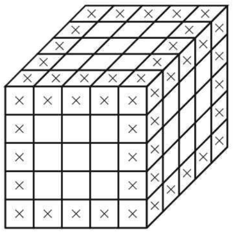
= Number of corner (vertex) cubes = 8 (always)

6. (*a*) Clearly, red is opposite to black, green is opposite to blue and brown is opposite to white.


Blue (Back)
Black (Top)
Brown (Right)
White (Left)
Green (Front)
Red (Bottom)

Hence, the colour opposite to brown is white.

7. (*b*) Number of smaller cubes having atleast two faces painted



= (Number of smaller cubes having 2 faces painted)

+ (Number of smaller cubes having 3 faces painted)

= (Number of middle cubes) + (Number of corner cubes)

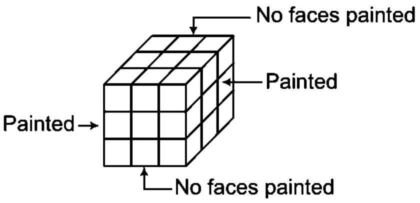
$\therefore$ Number of middle cubes $= 12(n-2) = 12(5-2)$

$= 12 \times 3 = 36$ (here, $n = 5$)

Number of corner (vertex) cubes = 8

$\therefore$ Required number of cubes $= 36 + 8 = 44$

8. (*b*)

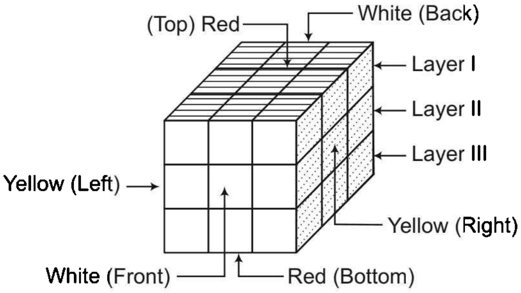

No faces painted
Painted
Painted
No faces painted

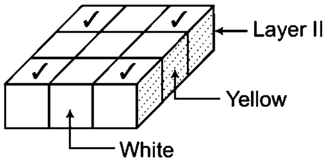
Total number of smaller cubes = 27

Clearly, cubes in middle layer are unpainted.

$\therefore$ Smaller cubes in middle layer $= \frac{27}{3} = 9$

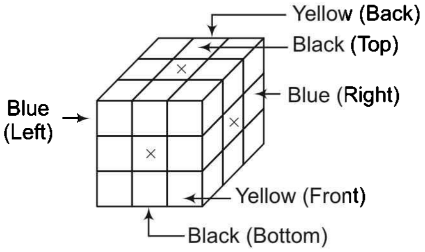
9. (*a*)


(Top) Red
White (Back)
Layer I
Layer II
Layer III
Yellow (Left)
Yellow (Right)
White (Front)
Red (Bottom)


Layer II
Yellow
White

From the given figure, it is very much clear that the four corner cubes in the second layer have one face painted with white and one face painted with yellow.

10. (*b*) As we know that, central cubes have only one face painted.


Yellow (Back)
Black (Top)
Blue (Left)
Blue (Right)
Yellow (Front)
Black (Bottom)

$\therefore$ Number of central cubes $= 6(n-2)^3$

$= 6(3-2)^2 = 6$ (here, $n = 3$)

11. (*b*) Number of smaller cubes $= (n)^3$

$\Rightarrow \quad 27 = (n)^3 \Rightarrow n = \sqrt[3]{27} = 3$

$\therefore$ Number of smaller cubes having two faces painted

$= 12(n-2) = 12(3-2) = 12$

12. (*b*) From the figure, there is no such cube which is painted red only on two sides.

13. (*c*) Number of smaller cubes with no surface painted

$= (n-2)^3 = (4-2)^3 = 8$ ($\because n = 4$)

14. (*c*) Number of smaller cubes with atleast two surfaces painted

= Number of cubes with three surfaces painted

+ Number of cubes with two surfaces painted

$= 8 + (n-2) \times 12 = 8 + (4-2) \times 12 = 8 + 24 = 32$

15. (*a*) Number of smaller cubes with two surfaces painted

$= (n-2) \times 12 = (4-2) \times 12 = 24$

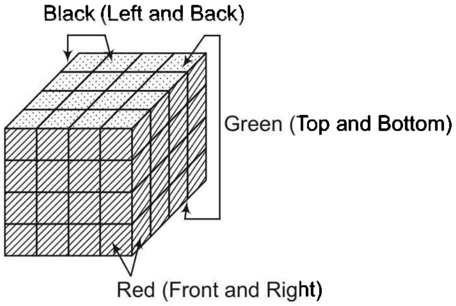
16. (*d*) Number of smaller cubes with three surfaces painted

= 8

17. (*c*) Since all the surfaces of the big cube are painted with some colours, therefore, number of smaller cubes with only one surface painted

$= 6 \times (n-2)^2$

$= 6 \times (4-2)^2 = 24$


Black (Left and Back)
Green (Top and Bottom)
Red (Front and Right)

18. (*c*) Number of smaller cubes with no surface painted

$= (n-2)^3 = (2)^3 = 8$

19. (*d*) Number of smaller cubes with less than three surfaces painted = Number of cubes with two surfaces painted

+ Number of cubes with one surface painted

$= (n-2) \times 12 + (n-2)^2 \times 6 = (4-2) \times 12 + (4-2)^2 \times 6$

$= 24 + 24 = 48$

20. (*b*) Number of smaller cubes with three surfaces painted = 8

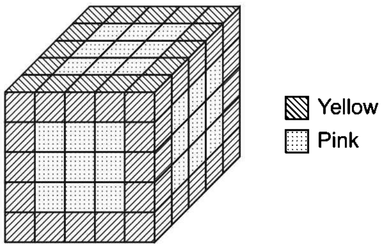
21. (*b*) Green colour is on the top and bottom surfaces of the cube. Hence, two surfaces painted with one surface green and another black or red will be present on the edges on the top and bottom surfaces.

∴ Required number of Cubes = $(n-2) \times 8 = 16$

22. (*c*) All the smaller cubes present on the top and bottom of the bigger cube have green colour on atleast one of the surfaces.

∴ Required number of cubes = 16 + 16 = 32

Solutions (Q. Nos. 23-27)



23. (*d*) Smaller cubes with no surface painted will be present inside the cube

∴ Required cubes = $(n-2)^3 = (5-2)^3 = (3)^3 = 27$

24. (*c*) Smaller cubes with three surfaces coloured yellow will be present on the corners and their number is 8.

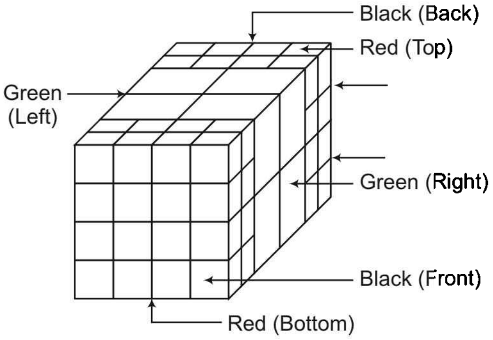
25. (*b*) Number of smaller cubes with atleast two surfaces coloured yellow = Number of cubes with three surfaces coloured yellow + Number of cubes with two surfaces painted yellow = $8 + (n-2) \times 12 = 8 + 3 \times 12 = 44$

26. (*a*) No such smaller cubes are present in the bigger cube.

27. (*b*) Number of cubes with atleast one face coloured = Number of cubes with three surfaces coloured + Number of cubes with two surfaces coloured + Number of cubes with one surface coloured = 8 + 54 + 36 = 98

Solutions (Q. Nos. 28-32)

Red ⇒ Top, Bottom
Black ⇒ Front, Back
Green ⇒ Left, Right
Total cubes = 72
Small cubes = 64
Big cubes = 8



28. (*d*) Number of cubes having only one face painted
= Number of central cubes
= 24

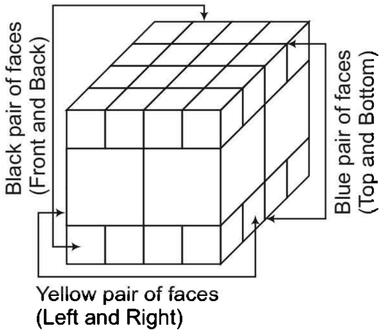
29. (*d*) Number of cubes having only two faces painted
= Number of middle cubes
= 32

30. (*c*) Number of cubes having three surface painted
= Number of corner (vertex) cubes
= 8

31. (*d*) Number of cubes having two or more faces painted
= Number of cubes having 2 faces painted
+ Number of cubes having 3 faces painted
= 32 + 8 = 40

32. (*b*) Number of cubes having no faces painted
= Total number of cubes
– Number of cubes with atleast one face painted
= 72 – (24 + 32 + 8)
= 8

Solutions (Q. Nos. 33-38)


Black pair of faces (Front and Back)
Blue pair of faces (Top and Bottom)
Yellow pair of faces (Left and Right)

33. (*a*) Number of cubes having atleast one face painted with black colour = 16 smaller cubes + 4 bigger cubes = 20

34. (*c*) Only one face painted cubes will be four on each of the two faces (top and bottom).

Hence, there are total 8 cubes.

35. (*b*) Number of cubes having only two face painted
= 2 each on 8 edges and 1 each on 4 edges
= 16 + 4 = 20

36. (*c*) Number of cubes with two or more faces painted
= Number of cubes with three faces painted + Number of cubes with two faces painted = 8 + 20 = 28

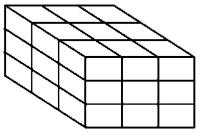
37. (*a*) Three faces painted cubes will be present on the corners and their number is 8.

38. (*d*) Number of cubes with no face painted yellow = 16 (8 each from top and bottom).

Master Exercise

Take a Leap...

1. The cube given below has been painted by three different colours. The opposite surfaces have been painted by the same colour. Next, the cube has been cut into 27 equal parts. How many such small cubes will be there whose only one surface is painted? **[SSC (SAS) 2006]**



(a) 4 (b) 6 (c) 8 (d) 12

2. Wooden little cubes each with an edge of one inch are put togther to form a solid cube with an edge of three inches. This big cube is then painted red all over the outside. When the big cube is broken-up into the original little ones, how many cubes will be without paint? **[SSC (DEO & LDC) 2010]**

(a) 0 (b) 1 (c) 3 (d) 4

3. In a solid cube made up of 27 small cubes, two opposite sides are painted red, two opposite sides yellow and two other sides while. How many small cubes have the colours yellow and white along in them? **[SSC (10+2) 2010]**

(a) 4 (b) 8 (c) 12 (d) 16

4. A solid cube of 4 inches has been painted red, green, and black on pair of opposite faces. It has been cut into one inch cubes. How many cubes have only one face painted that too only red? **[SSC (LDC) 2011]**

(a) 4 (b) 8 (c) 18 (d) 24

5. A solid red coloured cube is painted yellow on all sides. The cube is cut into 125 equal cubes. How many cubes will have 3 sides yellow? **[SSC (DEO & LDC) 2012]**

(a) 10 (b) 4 (c) 8 (d) 12

Directions (Q. Nos. 6-10) Read the following information carefully and answer the questions given below.

A cube of 4 cm has been painted on its surfaces in such a way that two opposite surfaces have been painted blue and two adjacent surfaces have been painted red. Two remaining surfaces have been left unpainted. Now, the cube is cut into smaller cubes of side 1 cm each.

6. How many cubes will have no side painted?

(a) 18 (b) 16 (c) 22 (d) 8

7. How many cubes will have atleast red colour on its surfaces?

(a) 20 (b) 22 (c) 28 (d) 32

8. How many cubes will have atleast blue colour on its surfaces?

(a) 20 (b) 8 (c) 24 (d) 32

9. How many cubes will have only two surfaces painted with red and blue colours, respectively?

(a) 8 (b) 12 (c) 24 (d) 30

10. How many cubes have three surface coloured?

(a) 3 (b) 4 (c) 2 (d) 16

Directions (Q. Nos. 11-20) Read the following information carefully and answer the questions given below. **[MAT 2009]**

Two adjacent faces of a solid cube have been painted red and the faces just opposite to the red painted faces have been painted black while the remaining faces have been painted green. After painting this cube has been divided into 64 smaller cubes.

11. How many cubes have only one face painted?

(a) 12 (b) 16 (c) 20 (d) 24

12. How many cubes have only two faces painted?

(a) 20 (b) 24 (c) 32 (d) 48

13. How many cubes have three surface painted?

(a) 4 (b) 6 (c) 8 (d) 12

14. How many cubes have four faces painted?

(a) 0 (b) 2 (c) 8 (d) 12

15. How many cubes have no faces painted?

(a) 4 (b) 6 (c) 8 (d) 12

16. How many cubes have atleast one face painted in red?

(a) 20 (b) 16 (c) 28 (d) 32

17. How many cubes have one or two faces painted but they have no three faces painted?

(a) 16 (b) 32 (c) 48 (d) 60

18. How many cubes have one face painted in green and have black or red colour on the face just adjacent to green face?

(a) 12 (b) 16 (c) 20 (d) 24

19. How many cubes have two adjacent faces painted in red or black?

(a) 2 (b) 4 (c) 6 (d) 8

20. How many cubes have black colour at the face which is just opposite to the face having red colour?

(a) 0 (b) 8 (c) 12 (d) 24

Directions (Q. Nos. 21-23) Read the following instructions carefully and answer the questions given below.

I. There is a rectangular wooden block of length 4 cm, height 3 cm and breadth 3 cm.
II. The two opposite surface of 4 cm × 3 cm are painted yellow on the outside.
III. The other two opposite surface of 4 cm × 3 cm are painted red on the outside.
IV. The remaining two surface of 3 cm × 3 cm are painted green on the outside.
V. Now the block is cut in such a way that cubes of 1 cm × 1cm × 1 cm are created.

21. How many cubes will have only one colour?

(a) 10 (b) 12 (c) 14 (d) 18

22. How many cubes will have no colour?

(a) 1 (b) 2 (c) 4 (d) 8

23. How many cubes will have any two colours?

(a) 32 (b) 24
(c) 16 (d) 12

Directions (Q. Nos. 24-28) Read the following information carefully and answer the questions given below.

A cuboid of dimensions (6 cm × 4 cm × 1 cm) is painted black on both the surfaces of dimensions (4 cm × 1 cm), green on the surfaces of dimensions (6 cm × 4 cm) and red on the surfaces of dimensions (6 cm × 1 cm). Now, the block is divided into various smaller cubes of side 1 cm each. The smaller cubes so obtained are separated.

24. How many cubes will have atleast two colours?

(a) 16 (b) 12 (c) 10 (d) 8

25. How many cubes will be formed?

(a) 6 (b) 12 (c) 16 (d) 24

26. If cubes having only black as well as green colour are removed, then how many cubes will be left?

(a) 4 (b) 8 (c) 16 (d) 20

27. How many cubes will have 4 coloured sides and 2 sides without colour?

(a) 8 (b) 4 (c) 16 (d) 10

28. How many cubes will have two sides with green colour and remaining sides without any colour?

(a) 12 (b) 10 (c) 8 (d) 4

Directions (Q. Nos. 29-38) Read the following information carefully and answer the questions given below.

91 small cubes of same size are arranged in two cubes of sides 4 cm and 3 cm each. The bigger cube is coloured red on two opposite faces, white on two adjacent faces and blue on the remaining faces while the smaller one is coloured white on two opposite faces, blue on two adjacent faces and red on the remaining faces. Taking both the cubes into consideration, answer the following questions based on the the above information.

29 How many smaller cubes are not coloured on any of faces?

(a) 1 (b) 4 (c) 8 (d) 9

30. How many cubes are coloured red, white and blue on one face each?

(a) 4 (b) 8 (c) 12 (d) 16

31. Leaving out uncoloured cubes, how many cubes are there without any red face?

(a) 36 (b) 40
(c) 42 (d) None of these

32. How many cubes have atleast one red face?

(a) 35 (b) 44 (c) 45 (d) 47

33. How many cubes have one face white and one face red and no face blue?

(a) 8 (b) 10 (c) 12 (d) 15

34. How many cubes are coloured blue, red or white on two faces each and not coloured on any other face?

(a) 6 (b) 7 (c) 18 (d) 10

35. How many cubes are coloured red, white or blue on one face each and have no other coloured face?

(a) 8 (b) 22 (c) 30 (d) 40

36. How many cubes are coloured blue on atleast one face?

(a) 41 (b) 43 (c) 45 (d) 47

37. How many cubes have atleast one white face?

(a) 40 (b) 44 (c) 46 (d) 48

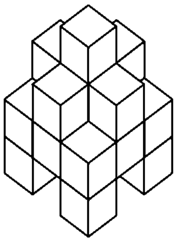
38. How many cubes are coloured on two faces only?

(a) 24 (b) 28 (c) 32 (d) 46

39. A cube has six faces each of a different colour. The red face is opposite to black. The green face is in between red and black. The blue face is adjacent to white and brown face is adjacent to blue. The four colours adjacent to green are **[UP PSC 2013]**

(a) red, black, brown and white
(b) red, black, brown and blue
(c) red, black, blue and white
(d) red, brown, blue and white

40. If the stack of blocks pictured here looks the same from all four directions, what is the maximum number of blocks that could be used to build it, based on what you can see from this angle?

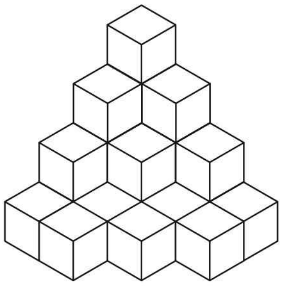


(a) 16 (b) 18 (c) 19 (d) 21

41. A 6 × 6 × 6 cube is formed by gluing together 216 wooden blocks that are 1 × 1 × 1. If the cube is resting on a table, what is the maximum number of 1 × 1 × 1 blocks that you can see from any angle at any one time? (If you can see even one face of a 1 × 1 × 1 block, then count it.)

(a) 46 (b) 86
(c) 91 (d) 126

42. What is the fewest number of blocks you need to add to make this shape into a cube?



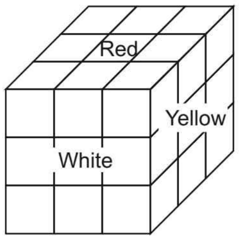
(a) 30 (b) 41
(c) 50 (d) 51

Response & Interpretations (Master Exercise)

1. (*b*) The central cube of each face will have only one face painted. Thus, there are six such cubes.

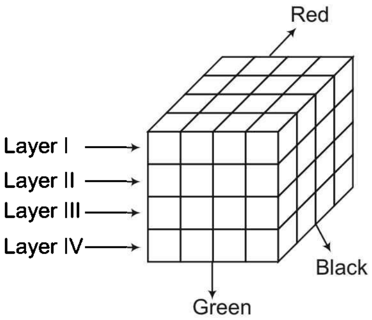
2. (*b*) The central cube of middle row will be without paint.

3. (*a*)



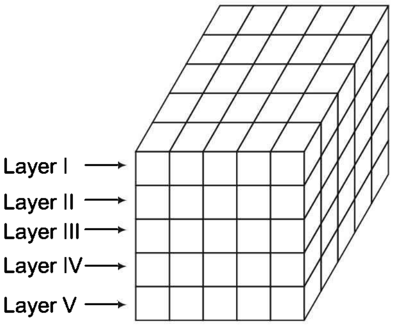
The cubes of middle row will have no red colour ⇒ 9 Cubes
The central cube will have no colour.
Now, out of 8 cubes, 4 cubes have both yellow and white colour.

4. (*b*)



There are four cubes in Layer I and four cubes in Layer IV which have only one face painted red and all other faces not painted at all. Thus there are eight such cubes.

5. (*c*)

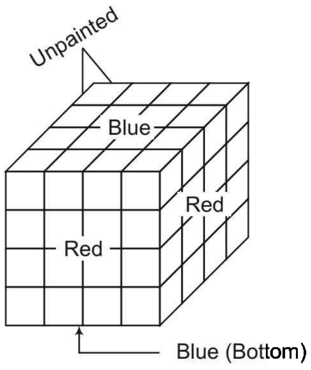


In layer I, the nine central cubes have only one face painted, four cubes at the corner have three faces painted and the remaining 12 cubes have two faces painted. In each of the layers II, III and IV, the nine central cubes have no face painted, the four cubes at the corner have two faces painted and the remaining 12 cubes have one face painted.

In layer V, the nine central cubes have only one face painted, the four cubes at the corner have three faces painted and the remaining 12 cubes have two faces painted.

Thus, the number of cubes having three faces painted
= 4 + 4 = 8

Solutions (Q. Nos. 6-10)



6. (*a*) Number of smaller cubes which are unpainted = 8 cubes from inside + 10 cubes from two adjacent unpainted surfaces = 18 cubes.

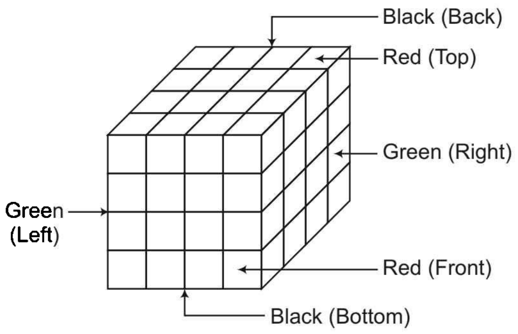
7. (*c*) 28 cubes from two adjacent surfaces painted red will have atleast red colour on their surfaces.

8. (*d*) 32 cubes from two opposite surfaces painted blue will have atleast one surface painted blue.

9. (*b*) 12 cubes present on the four edges common to blue and red surfaces will have two surfaces painted one with red colour and the other with blue colour.

10. (*c*) Only 2 cubes from the two corners will have three surfaces painted.

Solutions (Q. Nos. 11-20)



Red : Top, Front
Black : Back, Bottom
Green : Left, Right
Total cubes = 64

$\therefore \quad n = \sqrt[3]{64} = 4$

11. (*d*) Number of cubes having one face painted = Number of central cubes = $6(n-2)^2 = 6(4-2)^2 = 6 \times 4 = 24$

12. (*b*) Number of cubes having two faces painted = Number of middle cubes = $12(n-2) = 12(4-2) = 12 \times 2 = 24$

13. (*c*) Three faces painted cubes are always 8.

14. (*a*) It is clear from the figure that cubes having four faces painted = 0

15. (*c*) Required cubes = Inner central cubes

$= (n-2)^3 = (4-2)^3 = 8$

16. (*c*) Number of cubes having atleast one face painted in red = Number of cubes having one face painted in red + Number of cubes having two faces painted in red = 24 + 4 = 28

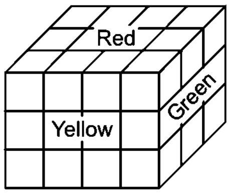
17. (*c*) Number of cubes having one or two faces painted = Number of cubes having one face painted + Number of cubes having two faces painted = 24 + 24 = 48

18. (*b*) Required number of cubes = (Number of cubes painted in green + black) + (Number of cubes painted in green + red) = $(4 \times 2) + (4 \times 2) = 8 + 8 = 16$

19. (*b*) Required number of cubes = Number of cubes painted in red on two adjacent faces + Number of cubes painted in black on two adjacent faces = 2 + 2 = 4

20. (*a*) It is clear from the figure that required number of cubes are zero in the given case.

Solutions (Q. Nos. 21-23)



Here, Front = Black = Yellow
Top = Bottom = Red
Left = Right = Green

21. (*a*) The total number of cubes have only one colour

$= (2 \times 4) + (1 \times 2)$
$= 8 + 2 = 10$

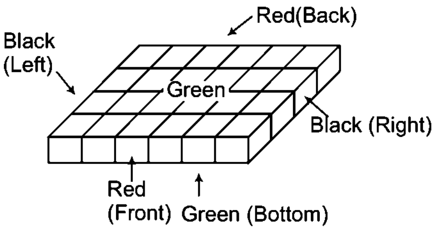
22. (*b*) The total number of cubes have no colour $= 2 \times 1$

$= 2$

23. (*c*) The total number of cubes have any two colours

$= (4 \times 2) + (8 \times 1)$
$= (8 + 8)$
$= 16$

Solutions (Q. Nos. 24-28)



24. (*a*) All the 16 cubes present on the boundary of this block will have atleast two colours.

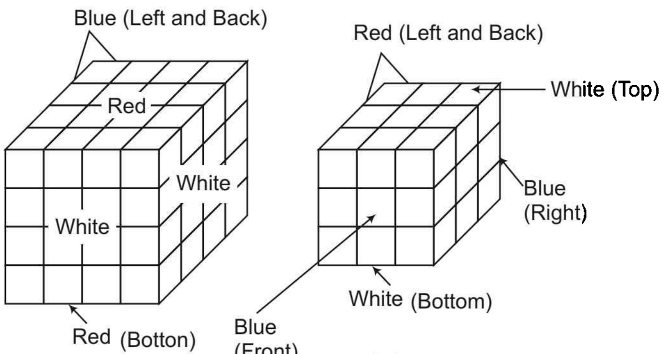
25. (*d*) 24 smaller cubes will be formed.

26. (*c*) A total of 16 cubes will be left, if cubes with black as well as green colours are removed.

27. (*b*) All the 4 cubes present on the corners will have four faces painted and two faces unpainted.

28. (*c*) 8 cubes from the upper and lower surfaces surrounded by 1 cm boundary will have two surfaces painted and remaining unpainted.

Solutions (Q. Nos. 29-38)



(A) (B)

29. (*d*) 8 smaller cubes from cube (A) and one smaller cube from cube (B) will have none of its surface painted *i.e.,* a total of 9 cubes will have none of its surface painted.

30. (*b*) 4 smaller cubes each from cubes (A) and (B) will have red, white and blue colours on one face each.

31. (*d*) 24 cubes from (A) and 11 cubes from (B) will not have red colours on any of their faces.

32. (*d*) 32 smaller cubes from (A) and 15 smaller cubes from (B) will have atleast one face red.

33. (*c*) 8 smaller cubes from (A) and four smaller cubes from (B) *i.e.*, a total 12 cubes will have one face white and one face red and no face blue.

34. (*c*) 12 smaller cubes from (A) and 6 smaller cubes from (B) *i.e.*, a total of 18 cubes are coloured blue, red or white on two faces each and not coloured on any other face.

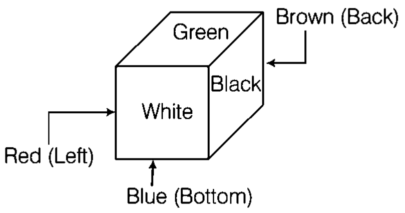
35. (*b*) 16 smaller cubes from (A) and 6 smaller cubes from (B) *i.e.*, a total of 22 cubes are coloured red, white or blue on one face each and have no other face coloured.

36. (*b*) 28 cubes from (A) and 15 cubes from (B) are coloured blue on atleast one of their face.

37. (*c*) 28 cubes from (A) and 18 cubes from (B) are coloured blue on atleast one of their face.

38. (*d*) $(n-2)\times 12=(4-2)\times 12=24$ cubes from (A) and $(n-2)\times 12=(3-2)\times 12=12$ cubes from (B) *i.e.*, total 36 cubes are coloured on two faces only.

39. (*a*)



Cleary, the four colours adjacent to green red, black, brown and white.

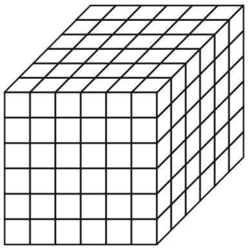
40. (*c*) There are four layers from the top to bottom.

1st layer has 1 block
2nd layer has 5 blocks
3rd layer has 3 rows of 3 blocks each
4th layer has 4 blocks

$\therefore$ Total blocks $= 1+5+3\times 3+4=10+9=19$ blocks

41. (*a*) Clearly, the four colours adjacent to green are- red, black, brown and white.

41. (*c*) 91 cubes



Method I

You can see three faces at once. You can see one face only of 25 blocks on each of the three faces, for a total of 75 blocks. You can see two faces of 5 blocks along each of the three edges visible, for a total of 15 blocks. Finally, you can see three sides of the one corner block that is facing you. The total number of blocks you can see is $= 75+15+1=91$.

Method II

If you remove all of the blocks you can see, you are left with a $5\times 5\times 5$ cube that you cannot see. There are $6\times 6\times 6=216$ blocks in all and you cannot see $5\times 5\times 5=125$ of them. So, you can see $= 216-125=91$ blocks.

42. (*b*) The bottom layer require 3 blocks, so that it can be turned into 4×4 block. Second layer from bottom will need 10 blocks similarly, third layer from bottom and top layer require 13 blocks and 15 blocks respectively.

$\therefore$ Total blocks required $= 3+10+13+15=41$ blocks

8

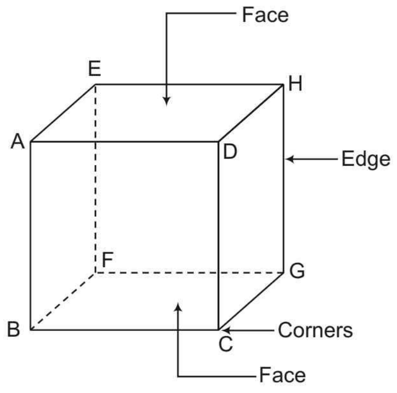
Dice

Dice are cubical or cuboidal shape objects containing numbers /figures/symbols/ embedded on their surfaces. Dice are used for gambling and non-gambling purposes likes craps, ludo etc.

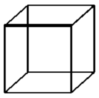
Different types of questions covered in this chapter are as follows

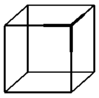
- Finding Digits/Dots/Letters/Colours on the Opposite Face of Any Particular Face
- Questions Related to Unfolded Dice

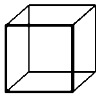
Die/Dice is/are a three-dimentional figure with each of its six sides/faces showing different numbers/letters/colurs etc. It has 8 corners and 12 edges. In a dice, length, breadth and height all are equal to each other.



In the above dice,

Edges  = AE, EH, HD, AD, BF, FG, GC, BC, AB, DC, HG and EF

Corners  = A, B, C, D, E, F, G and H

Surfaces  = AEHD, DHGC, AEFB, BCGF, ABCD and EFGH

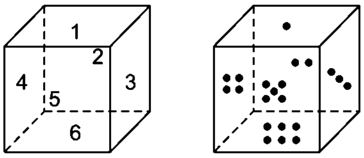
Types of Dice

Dice having digits/dots from 1 to 6 on its surfaces can be divided into two types

1. Standard Dice

When, the sum of digits/dots on opposite faces is equal to 7, then the dice is called standard dice.

Let us see



Sum of the opposite faces

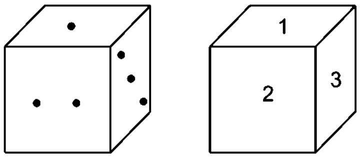
1 + 6 = 7   4 + 3 = 7   2 + 5 = 7   5 + 2 = 7   3 + 4 = 7   6 + 1 = 7

Sum of the adjacent faces

1 + 2 = 3,   2 + 1 = 3,   3 + 1 = 4,   4 + 1 = 5,   5 + 1 = 6,   6 + 2 = 8,
1 + 3 = 4,   2 + 3 = 5,   3 + 2 = 5,   4 + 2 = 6,   5 + 3 = 8,   6 + 3 = 9,
1 + 4 = 5,   2 + 4 = 6,   3 + 5 = 8,   4 + 5 = 9,   5 + 4 = 9,   6 + 4 = 10,
1 + 5 = 6,   2 + 6 = 8,   3 + 6 = 9,   4 + 6 = 10,   5 + 6 = 11,   6 + 5 = 11

Identification of Standard Dice

If we see any dice from any angle, then we can see a maximum of only three faces of it : Front surface, top surface and right/left surface. From the digits or dots that can be seen on the dice, we make pairs of two digits/dots and add the digits in each pair. If sum of any two adjacent faces of dice is not equal to 7, this is called as a standard dice.



1 + 2 = 3   1 + 3 = 4   2 + 3 = 5

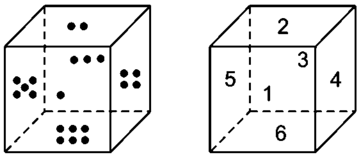
- If the sum of digits/dots of the adjacent faces of a dice is equal to 7, that type of dice is called a general dice. In another words, a dice which is *vice-versa* to standard dice is called a general dice.

Face/Surface	Opposite Face/Surface	Adjacent Faces/Surfaces
1	6	2, 3, 4, 5
2	5	1, 3, 4, 6
3	4	1, 2, 5, 6
4	3	1, 2, 5, 6
5	2	1, 3, 4, 6
6	1	2, 3, 4, 5

2. General Dice

When the sum of digits/dots on opposite faces is not equal to 7, then the dice is called general dice.

Let us see



Sum of the opposite faces

1 + 3 = 4,   4 + 5 = 9,   2 + 6 = 8,   5 + 4 = 9,   3 + 1 = 4,   6 + 2 = 8

Sum of the adjacent faces

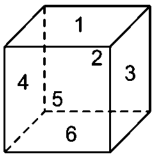
$1+2=3$, $2+1=3$, $3+2=5$, $4+1=5$, $5+1=6$, $\boxed{6+1}=7$,
$1+4=5$, $2+3=5$, $\boxed{3+4=7,}$ $4+2=6$, $\boxed{5+2=7,}$ $6+3=9$,
$1+5=6$, $2+4=6$, $3+5=8$, $\boxed{4+3=7,}$ $5+3=8$, $6+4=10$,
$\boxed{1+6=7,}$ $\boxed{2+5=7,}$ $3+6=9$, $4+6=10$, $5+6=11$, $6+5=11$

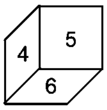
If digits/dots 1 to 6 are marked on the surface of a dice, then in general dice

Face/Surface	Opposite Faces/Surfaces	Adjacent Faces/Surfaces
1	2/3/4/5	6 or 2/3/4/5
2	1/3/4/6	5 or 1/3/4/6
3	1/2/5/6	4 or 1/2/5/6
4	1/2/5/6	3 or 1/2/5/6
5	1/3/4/6	2 or 1/3/4/6
6	2/3/4/5	1 or 2/3/4/5

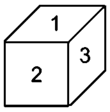
Methods to Find Digits/Dots/Words/Letters/Figures/Symbols at Opposite Faces of a Dice

There are 6 faces in the dice and every face has a opposite face.





Invisible faces



Visible faces

1 is opposite to 6. 6 is opposite to 1. 2 is opposite to 5.
5 is opposite to 2. 3 is opposite to 4. 4 is opposite to 3.

When Single Position of a Dice is Given

If only one single position of a dice is given in the question, the students are required to find out whether the given dice is a standard dice or general dice.

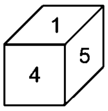
Case I **When the given dice is a standard dice**

As we know that in a standard dice the sum of the digits/points of opposite faces is equal to 7.

Hence, in a standard dice the opposite faces are as follows

1 and 6 or 6 and 1 are opposite faces.
2 and 5 or 5 and 2 are opposite faces.
3 and 4 or 4 and 3 are opposite faces.

***Ex* 1** What will be the digit on the opposite face of the particular face having digit 4 in the dice given below?



(a) 3 (b) 1 (c) 2 (d) 6

Sol. (*a*) In the given dice, $1+4=5 \Rightarrow 1+5=6 \Rightarrow 4+5=9$

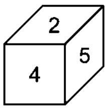
Clearly, the sum of the digits on the adjacent faces is not equal to 7. Hence, the given dice is a standard dice. As digits sum of opposite faces of a standard dice is 7, hence, the face opposite to the face having digit 4 will have the digit 3.

$$4+3=7$$

Case II When the given dice is a general dice

As we know that, in a general dice sum of the digits at any of the two adjacent faces is equal to 7.

Let us consider a dice

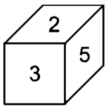


Now, the above dice is a general dice as sum of number on any of the two adjacent faces is 7 *i.e.,* 2 + 5 = 7.

Now, number opposite to 4 can be any number from 1, 3 and 6. 2 and 5 cannot be on the opposite face of 4 as they are adjacent to it. So, the correct group of numbers opposite to 4 is 1/3/6.

➘ In some questions, the answer options may not contain all the possible numbers which can exists on the opposite side of a given number. Then, the correct answer is the option containing maximum possible correct pair of numbers and if it does not contain any such pair the answer may be marked as none of these or data inadequate.

***Ex* 2** What digit will take place at the face opposite to the face having digit 2?



(a) 1/4 (b) 4 (c) 1/6 (d) 1/4/6

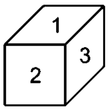
Sol. (*d*) In the given dice, 2 + 5 = 7 (adjacent faces digits sum)

Hence, the given dice is not a standard dice as in a standard dice, sum of the digits of any two adjacent faces cannot be 7. Infact, this situation is related to general dice. Hence, this problem will be solved on the basis of a general dice.

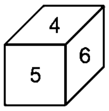
As 5 and 3 are the adjacent faces of 2 therefore the faces opposite to 2 can be 1 or 4 or 6 ⇒ 1/4/6.

When Two Positions of a Single Dice are Given

Case I Digits are different in both positions as follows



I



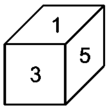
II

Clearly, in first position, digits are 1, 2 and 3 and in second position, digits are 4, 5 and 6.

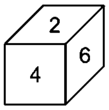
Therefore, in both the positions of given dice, all the digits are different from one another. In such case any digit in position I can be opposite to any of the three digits in position II and *vice-versa* as given below

1 can be opposite to 4/5/6.
2 can be opposite to 4/5/6.
3 can be opposite to 4/5/6.
4 can be opposite to 1/2/3.
5 can be opposite to 1/2/3.
6 can be opposite to 1/2/3.

***Ex* 3** In the two positions of a given dice as given below, what digit comes at the face opposite to the face having digit 2?



I

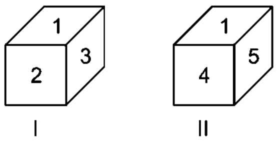


II

(a) 1/5/6 (b) 1/3/4 (c) 1/3/5 (d) 1/4/6

Sol. (*c*) As all the digits given in both the positions (I and II) are different from one another. So, digits 1, 3 and 5 can be opposite to digit 2.

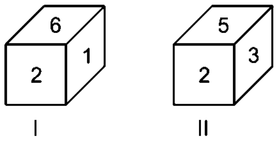
Case II When one digit is common in both the positions and the common digit is at the same face as follows



In this case, except the common digit, the digits on the other faces are opposite to each other and the face opposite to the common digit will have that digit which is invisible. Therefore, in the two positions of the given figure the opposite faces are given below

1 and 6 are opposite.
2 and 4 are opposite.
3 and 5 are opposite.

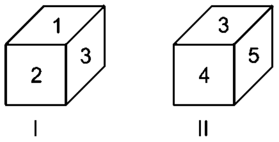
***Ex* 4** What digit will be on the face opposite to face having digit 1 in the two positions of a single dice given below?



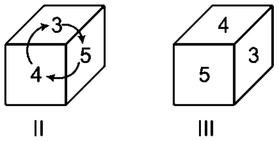
(a) 5 (b) 4 (c) 3 (d) 2

Sol. (c) In both the positions of dice, common digit 2 is on the same face. In position I, right face has digit 1 while in position II, right face has digit 3. Therefore, 1 and 3 are on opposite faces.

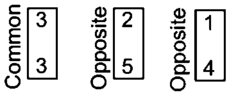
Case III When the common digit is on different faces as follows



In this case, we form two different orders of the digits from both positions of dice in clockwise direction starting from the common digit. In both the orders, the digits written after the common digit are opposite to each other. Let us see the changed order of digits the position II is given in the position III. When digits move clockwise



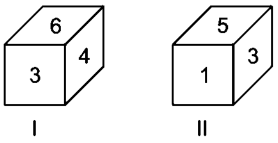
Writing digits of dice I
Writing digits of dice II (clockwise)
Clearly, in the case



1 and 4 are opposite.
2 and 5 are opposite.
3 and 6 are opposite.

In this case, face having common digit will opposite to the face which is invisible. This is the reason why the common digit 3 will be opposite to the invisible digit 6.

***Ex* 5** In the following question, two positions of a single dice are given. Find the face which is opposite to the face having digit 6.



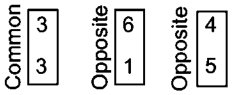
(a) 1 (b) 5 (c) 3 (d) 2

Sol. (*a*) In this problem, common digit 3 is at different faces

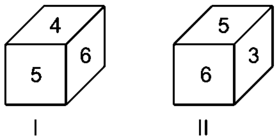
Writing the digits of dice I.

Writing the digits of dice II, (clockwise)

Clearly, 6 and 1 are opposite to each other



Case IV When two digits are common in both the positions as follows



In this case,

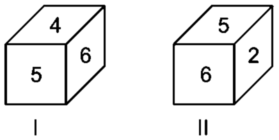
(i) There is a probability of coming two digits on the faces opposite to the faces having common digits and these two digits are invisible.

(ii) Uncommon digits in each dice are opposite to each other.

Hence, for the figures, given in the Case IV, the following will be true

1 and 5/6 are opposite faces.
2 and 5/6 are opposite faces.
3 and 4 are opposite faces.
5 and 1/2 are opposite faces.
6 and 1/2 are opposite faces.

***Ex* 6** In the following question the two positions of a single dice are given. Find the digit on the face which is opposite to the face having digit 2.



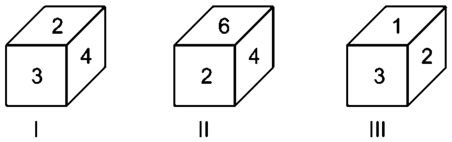
(a) 6 (b) 4 (c) 3 (d) 1

Sol. (*b*) As in this case, 5 and 6 are common digits while 4 and 2 are uncommon. As the rule given in case IV, here uncommon digits will be opposite to each other. Hence, 4 will definitely be opposite to digit 2.

When Three or Four Positions of a Single Dice are Given

In this case, first of all, form of that dice is considered which exposes the particular digit about which the question is asked and at the same time anyone of the remaining dice is taken to get two positions of the same dice. Finally the given question is solved by applying two position rules. The following example will give a better idea about solving problems under this category.

***Ex* 7** In the following question, three positions of the same dice are given. What will be the digit on the face opposite to the face having digit 1?



(a) 6 (b) 5 (c) 4 (d) 3

Sol. (c) In the given question, the correct solution can be found out by two methods.

Method I

Taking dice I and III, 2 and 3 are common.

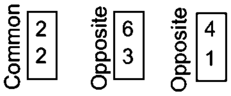
So, 4 will be opposite to 1.

Method II

Taking dice II and III, in II and III only one digit 2 is common.

Now, writing digits of dice II (clockwise) writing digits of dice III.

Clearly, 4 will opposite to 1.



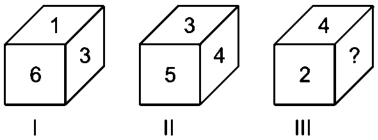
Methods to Find Digits/Dots/Figures/Symbols at the Blank Face

Basically, there are two methods

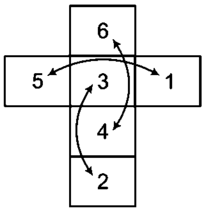
1. Right angle method
2. Anti-clockwise method

The two methods mentioned above can be understood by the given example

In the following question, three positions of a single dice are given



To find (?), firstly we take position I and II of the given dice as these two positions have a common digit 3. Now, the unfolded figure will be as below

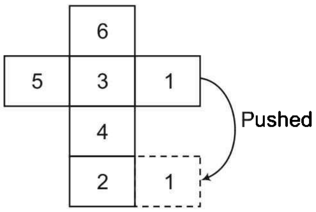


1 and 5 are opposite faces. 2 and 3 are opposite faces. 4 and 6 are opposite faces.

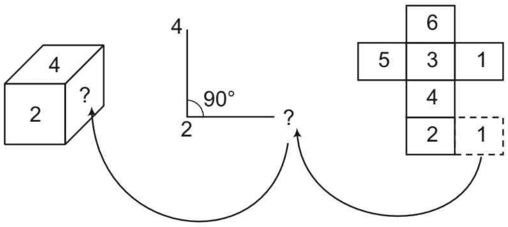
➘ Elaborated method of unfolding a dice is given in Type II.

1. Right Angle Method

Face having digit 1 in the unfolded figure is pushed beside the face having digit 2 in the following way



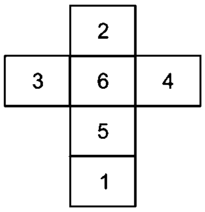
Now, compare the position III with right angle and unfolded figure obtained from pushing,



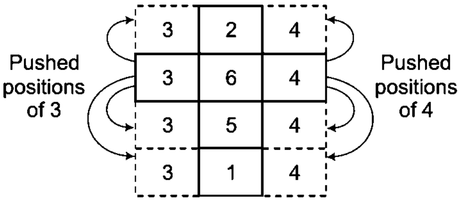
∴ ? = 1

How to Push Unfolded Faces?

Consider the following unfolded figure

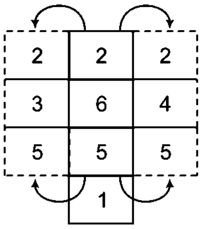


- **Now, faces can be pushed as below**

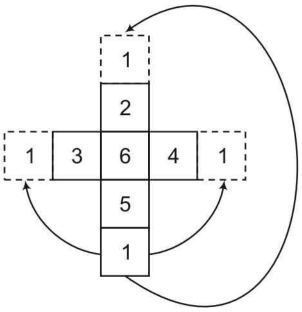


As any face of a dice is attached with other four faces, therefore any face can be pushed towards its adjacent faces. For the faces having digits 3 and 4, the faces having digits 2, 6, 5 and 1 are adjacent faces.

- **Similarly, faces having digits 2 and 5 can be pushed as below**



- **Again, face having digit 1 can be pushed the way given below**



2. Anti-clockwise Method

Now, compare position III of a dice with unfolded figure obtained by pushing and go anti-clockwise from the face having digit 2 to get the following situation

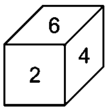
From position III of dice	2	?	4
From unfolded figure obtained by pushing :	2	1	4

∴ ? = 1

Type 1 Finding Digits/Dots/Letters/Colours on the Opposite Face of Any Particular Face

In this type of questions, a figure(s) of dice is/are given and asked about the opposite digit/dot/letter/colour of a particular face. Candidates are required to find the answer value from the given options.

Ex **8** Find the digit at the face opposite to the face having digit 6 in the given dice.



(a) 1 (b) 3 (c) 5 (d) 1/3

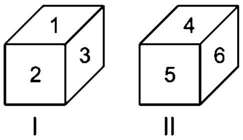
Sol. (*a*) According to the question,

$$6 + 2 = 8,\ 2 + 4 = 6,\ 4 + 6 = 10$$

So, the given dice is a standard dice.

∴ Digit opposite to 6 = 1

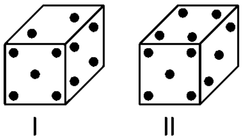
***Ex* 9** In the following question, two positions of a single dice are given. Find the digit at the face opposite to the face having digit 1.



(a) 4 (b) 5 (c) 6 (d) 4/5/6

Sol. (*d*) As in position I, 1 is at the top and 2 and 3 are the adjacent faces of 1. Hence, 1 may have any one of the digits given in position II at its opposite face. It means 1 may have 4 or 5 or 6 at it opposite face.

***Ex* 10** In the following question, two positions of a single dice are given. Find the dots at the face opposite to the face having 3 dots.

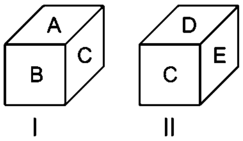


(a) 1 (b) 2 (c) 5 (d) 6

Sol. (*b*) Common dots in positions I and II = 4 and 5

∴ Face opposite to the face having 3 dots = Face having 2 dots

***Ex* 11** On the basis of the given two positions of single dice, find the letter at the face opposite to the face having letter A.



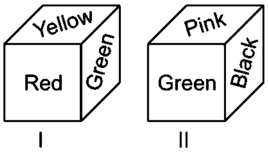
(a) B (b) C (c) E (D) D

Sol. (*c*) Common letter = C (on different face)

	Common		Opposite		Opposite	
From position I,		C		B		A
From position II,		C		D		E

Clearly, E is opposite to A.

***Ex* 12** Six faces of a block have been painted with green, yellow, red, black, pink and white. Two positions of this block are given below. If the pink colour be at the top, then which colour will be at the bottom? **[MAT 2009]**



(a) Blue (b) Green (c) Yellow (d) Red

Sol. (*d*) From both the positions I and II,

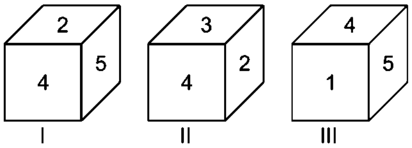
Common colour = green (at different faces)

From position I,	Green	Red	Yellow
From position II (clockwise),	Green	Pink	Black

Clearly, red is opposite to pink. It means red is at the bottom, if pink is at the top.

***Ex* 13** From the given three positions of a single dice, find the digit at the face opposite to the face having digit 4.

[SSC (CGL) 2008]

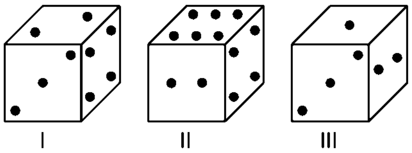


(a) 1 (b) 3 (c) 5 (d) 6

Sol. (*d*) From all the three positions of the dice, adjacent faces of 4 = 1, 2, 3 and 5.

It is clear that, the digit opposite to 4 = 6

***Ex* 14** From the given three positions of a single dice, find the number of dots at the face opposite to the face having 3 dots.

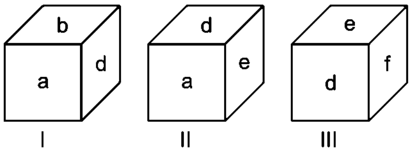


(a) 2 (b) 4 (c) 5 (d) 6

Sol. (*d*) From positions I and II, common dots = 2 and 4 (at the common right face)

So, the face opposite to face having 3 dots will be the face having 6 dots.

***Ex* 15** From the given three positions of a single dice, find the letter at the face opposite to the face having letter a.



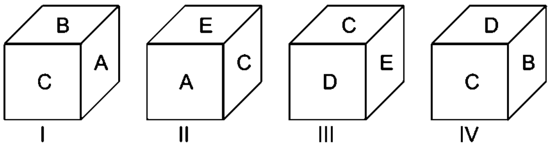
(a) b (b) d (c) e (d) f

Sol. (*d*) From positions II and III,

Common letters = d and e

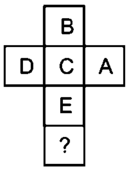
Clearly, f is opposite to a.

***Ex* 16** Four positions of dice are given below. Which letter will be opposite to D? **[SSC (CGL) 2013]**



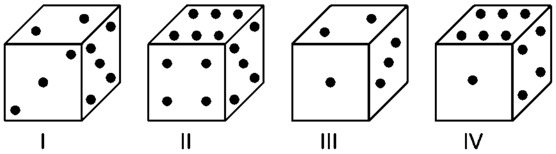
(a) D (b) A (c) B (d) C

Sol. (*b*) Dice can be shown as



So, from the unfolded dice, it is clear that the letter opposite to D is A.

Ex **17** From the given four positions of a single dice,find the number of dots at the face opposite to the face having 2 dots.



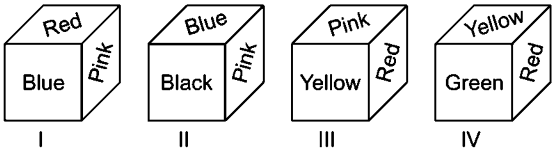
(a) 1 (b) 4 (c) 5 (d) 6

Sol. (*d*) From positions I and II,

Common dots = 5 [at the same (Right) face]

So, face opposite to the face having 2 dots will be the face having 6 dots.

Ex **18** From the given four positions of a single dice, find the colour at the face opposite to the face having red colour.



(a) Yellow (b) Pink (c) Green (d) Black

Sol. (*d*) From the given four positions of a single block,

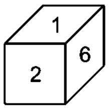
Faces adjacent to face having red colour = blue, pink, yellow, green

Clearly, black is opposite to red.

Practice Corner **8.1**

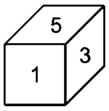
Build your Confidence...

1. Find the digit at the face opposite to the face having digit 2 in the dice given below.



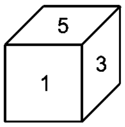
(a) 3/4 (b) 3/5 (c) 4/5 (d) 3/4/5

2. Find the digit at the face opposite to the face having digit 1 in the given dice. **[UP B.Ed. 2011]**



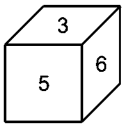
(a) 2 (b) 4 (c) 6 (d) 3

3. Find the digit at the face opposite to the face having digit 3 in the given dice. **[UP B.Ed. 2012]**



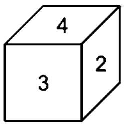
(a) 2 (b) 4 (c) 6 (d) 3

4. Find the digit at the face opposite to the face having digit 5 in the given dice **[MAT 2010]**



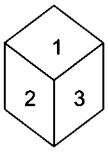
(a) 1
(b) 2
(c) 1/4
(d) 1/2/4

5. Find the digit at the face opposite to the face having digit 4 in the given dice. **[UP B.Ed. 2012]**



(a) 1
(b) 5
(c) 6
(d) 1/5/6

6. Where is the invisible number in the two positions of the same cube? [SSC (CGL) 2008]



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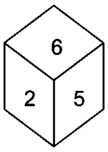
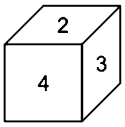


II

(a) Opposite of 2 (b) Opposite of 3
(c) Opposite of 4 (d) Opposite of 6

7. Which number will appear on the face opposite to 1? [SSC (10+2) 2012]



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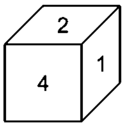
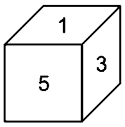


II

(a) 6 (b) 5 (c) 4 (d) 3

8. From the given two positions of a single dice, find the digit at the face opposite to the face having digit 4. [UP B.Ed. 2012]



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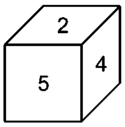
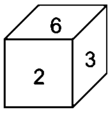


II

(a) 1 (b) 2 (c) 3 (d) 4

9. Two positions of a cube are given. Based on them find out which number is found opposite number 4 in a given cube? [SSC (CGL) 2008]



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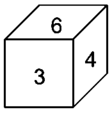
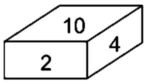


II

(a) 1 (b) 2 (c) 3 (d) 4

10. From the given blocks when 10 is at the bottom, which number will be at the top? [SSC (CGL) 2013]



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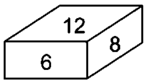
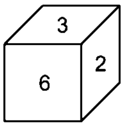


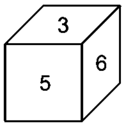
II

(a) 8 (b) 12 (c) 6 (d) 4

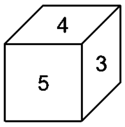
11. Three positions of a dice are given below. Identify the number on the face opposite to 6. [SSC (Steno) 2011, SSC (CPO) 2013]



I



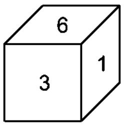
II



III

(a) 1 (b) 4 (c) 5 (d) 7

12. From the given three positions of a single dice, find the digit at the face opposite to the face having digit 3. [SSC (CPO) 2009]



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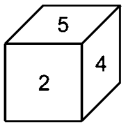
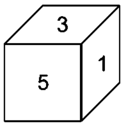


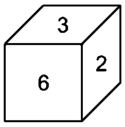
II



III

(a) 2 (b) 4 (c) 5 (d) 6

13. From the given four positions of a single dice, find the digit at the face opposite to the face having digit 6.



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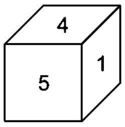
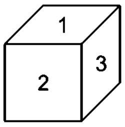
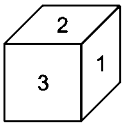


II



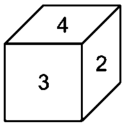
III



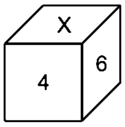
IV

(a) 1 (b) 3 (c) 4 (d) 5

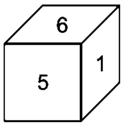
14. Given below are the different positions of a dice. What shall come in the place of 'X'? [SSC (FCI) 2012]



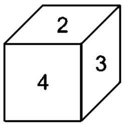
I



II



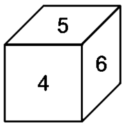
III



IV

(a) 3 (b) 5 (c) 2 (d) 1

15. From the given four positions of a single dice, find the digit at the face opposite to the face having digit 3.



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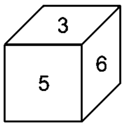

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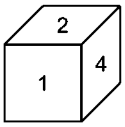
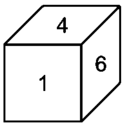


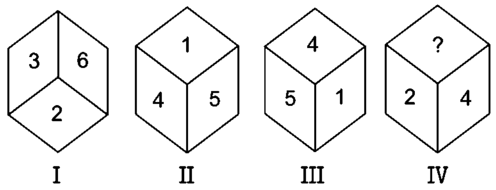
III



IV

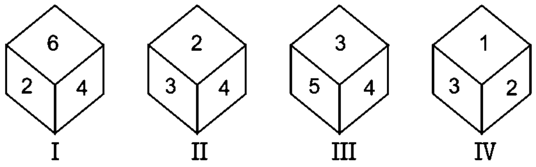
(a) 1 (b) 2 (c) 4 (d) 5

16. The following diagram depicts various views of a cube. Each faces has some number, where as in cube 4, one face is blank. From the answer choices select the number that should come in the blank space. **[SSC (CPO) 2008]**



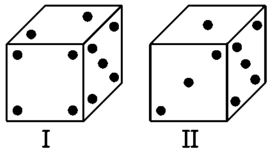
(a) 1 (b) 5 (c) 6 (d) 3

17. A dice is thrown four times and its different positions are shown below. What number is opposite to face showing 2? **[SSC (CPO) 2013]**



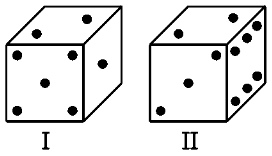
(a) 6 (b) 3 (c) 4 (d) 5

18. From the given two positions of a single dice, find the number of dots at the face opposite to the face having 4 dots.



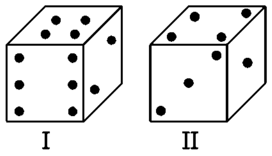
(a) 1 (b) 2 (c) 3 (d) 5

19. From the given two positions of a single dice, find the number of dots at the face opposite to the face having 1 dot. **[SSC (FCI) 2011]**



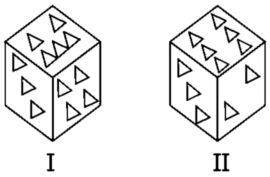
(a) 1 (b) 2 (c) 3 (d) 6

20. From the given two positions of a single dice, find the number of dots at top face of the dice, if its bottom face has 6 dots. **[SSC (CGL) 2011]**



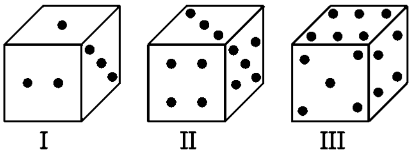
(a) 1 (b) 2 (c) 4 (d) 5

21. Two positions of a cubical block are given below, each face having a number of small triangles. In another positoin of the cube. If there is one triangle at the bottom, how many triangles will be there on the top face? **[SSC (CPO) 2010]**



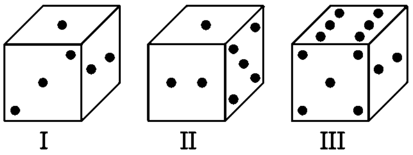
(a) 4 (b) 3 (c) 2 (d) 5

22. How many dots will appear on the surface opposite to the surface having 6 dots. **[SSC (CPO) 2009]**



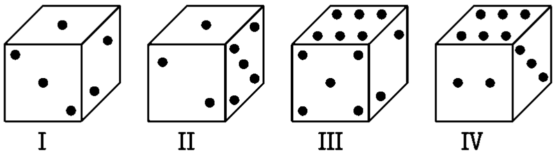
(a) 3 (b) 4 (c) 5 (d) 2

23. From the given three positions of a single dice, find the number of dots at the face opposite to the face having 1 dots.



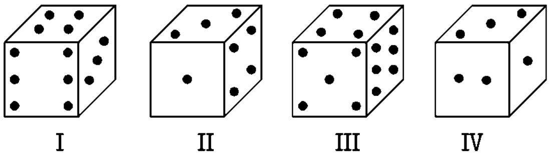
(a) 2 (b) 3 (c) 4 (d) 6

24. From the given four positions of a single dice, find the number of dots at the face opposite to the face having 1 dot.



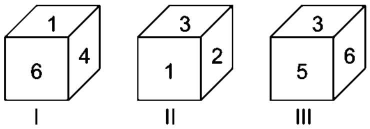
(a) 3 (b) 4 (c) 5 (d) 6

25. From the given four positions of a single dice, find the number of dots at the face opposite to the face having 3 dots.

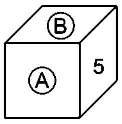


(a) 2 (b) 4
(c) 5 (d) 6

26. A cube has six numbers marked 1, 2, 3, 4,5 and 6 on its faces. Three views of the cube are shown below

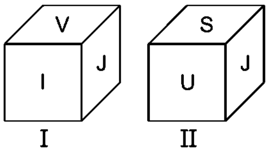

1
6
4
3
1
2
3
5
6
I
II
III

What possible numbers can exist on the two faces marked A and B, respectively? **[UPSC (CSAT) 2013]**



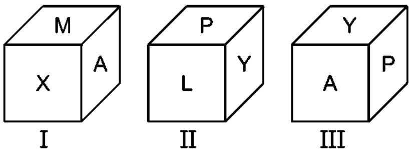
(a) 2 and 3
(b) 6 and 1
(c) 1 and 4
(d) 3 and 1

27. From the given two positions of a single dice, find the letter at the face opposite to the face having letter V. **[SSC (FCI) 2008]**



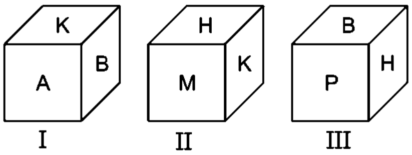
(a) S
(b) U
(c) J
(d) I

28. From the given three positions of a single dice, find the letter at the face opposite to the face having letter L.


M
X
A
P
L
Y
Y
A
P
I
II
III

(a) A
(b) M
(c) X
(d) Y

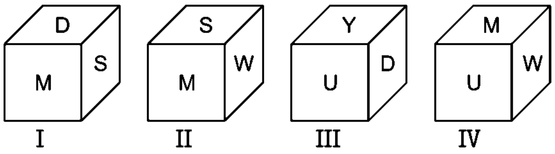
29. Three views of a cube following a particular motion are given below. **[UPSC (CSAT) 2012]**


K
A
B
H
M
K
B
P
H
I
II
III

What is the letter opposite to A?

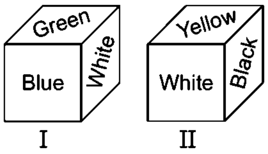
(a) H (b) P (c) B (d) M

30. From the given four positions of a single dice, find the letter at the face opposite to the face having letter D.


D
M
S
S
M
W
Y
U
D
M
U
W
I
II
III
IV

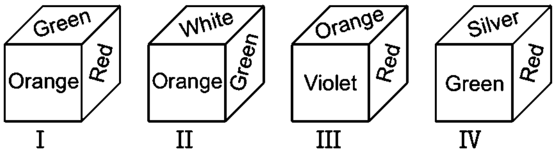
(a) M (b) S (c) W (d) U

31. Six faces of a block have been painted with green, blue, white, yellow, black and pink. Two positions of this block is given below. If the black colour be at top, then which colour will be at the bottom?


Green
Blue
White
Yellow
White
Black
I
II

(a) Green (b) Blue (c) Yellow (d) White

32. From the given four positions of a single dice, find the colour at the face opposite to the face having green colour. **[SSC (DEO) 2008]**


Green
Orange
Red
White
Orange
Green
Orange
Violet
Red
Silver
Green
Red
I
II
III
IV

(a) Orange (b) Red (c) Silver (d) Violet

Response & Interpretations **(8.1)**

1. (*d*) According to the question,

$1 + 2 = 3$

$2 + 6 = 8$

$\boxed{6 + 1} = 7$

Clearly, it is not a standard dice.

∴ Digit at the opposite face of 2 = 3 or 4 or 5

2. (*c*) According to the question,

$5 + 1 = 6$

$1 + 3 = 4$

$3 + 5 = 8$

Clearly, it is a standard dice.

∴ Digit at the face opposite to 1 = 7 − 1 = 6

3. (*b*) According to the question,

$5 + 1 = 6$

$1 + 3 = 4$

$3 + 5 = 8$

Clearly, it is a standard dice.

∴ Digit at the face opposite to 3 = 7 − 3 = 4

4. (*b*) According to the question,

$3 + 5 = 8$

$5 + 6 = 11$

$6 + 3 = 9$

Clearly, it is a standard dice.

∴ Digit at the face opposite to 5 = 7 − 5 = 2

5. (*d*) According to the question,

$\boxed{4 + 3} = 7$

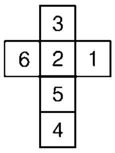
$4 + 2 = 6$

$3 + 2 = 5$

Clearly, it is not a standard dice.

∴ Digit opposite 4 = 1 or 5 or 6

6. (*a*) The invisible number is 4 and it is opposite to number 2.



7. (*d*) Dice I → 2 3 4

Dice II → 2 1 4

So, opposite side of 1 is 3.

8. (*c*) In both the positions, 5 is at common face (front face). So, digit 3 at the side face in position I will be opposite to the side face having digit 4 in position II.

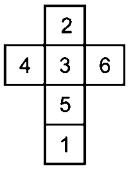
9. (*b*) In the given two dices two numbers are common *i.e.,* 3 and 6. So, remaining two numbers are opposite to each other Hence, number 2 is opposite to the number 4.

10. (*b*) From the two views of blocks it is clear that when 10 is at the bottom, number 12 will be at the top.

11. (*b*) From dice II and III, 3 and 5 are two common numbers. Hence, 6 and 4 are opposite to each other.

or

From second method (Dice I and II) (since, 3 is common)



1 is opposite to 3. 2 is opposite to 5.

4 is opposite to 6.

12. (*b*) From positions II and III

Position II (clockwise) 5 4 2

Position III 5 3 1

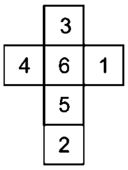
Clearly, digit opposite to 3 = 4

13. (*a*) From positions I and III,

Common digits = 2 and 3

∴ Digit opposite to 6 = 1

14. (*a*) Expanded form of the dice is



Thus, X = 3

15. (*c*) From positions II and IV,

Common digit 6 is at the same (side) face in both the positions.

∴ Digit opposite to 3 = 4

16. (*d*) From the four views of the cube it is clear that

4 lies opposite 6. 3 lies opposite 1.

2 lies opposite 5.

Therefore, the number 3 will be in the place of question mark.

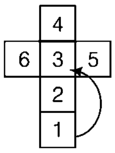
17. (*d*) It is quite clear from the positions I, II and IV that except 5, all numbers (6, 4, 3 and 1) are on adjacent faces of 2. Hence, 5 and 2 are opposite to each other.

18. (*c*) In both the positions, 5 dots are common at the same (Right) face. So, face having 4 dots will be opposite to face having 3 dots.

19. (*d*) In both the positions, 2 dots are common at the same (top) face. So, face having 1 dot will be opposite to the face having 6 dots.

20. (*d*) In both the positions, 4 dots are common at the same (top) face. So, face having 6 dots will be opposite to the face having 3 dots according to the clockwise direction.

21. (*b*) If there is one triangle at the bottom, there would be three triangles on the top.



22. (*a*) From the figures (ii) and (iii), it is clear that the two surfaces are common to both figures *i.e.,* 4 and 5.

So, the surfaces left contains 3 and 6 dots, which are opposite to each other.

23. (*d*) From positions II and III, Common dots = 2 and 5

So, face opposite to face having 1 dot will be the face having 6 dots.

24. (*d*) From positions I and III,

Common points = 2 [at the common (right) face]

So, face opposite to the face having 1 dot will be the face having 6 dots.

25. (*c*) From positions I, II and IV,

Adjacent faces of the face having 3 dots = 1, 2, 4 and 6

So, face opposite to the face having 3 dots will be the face having 5 dots.

26. (*a*) Looking at the first two figures we see that 2 is opposite to 6 and 3 is opposite to 4. The third figure tells us that 5 is opposite to 1. Thus, the numbers A and B, which are adjacent to 5 could be any of the following four, 6 and 4, 4 and 2, 2 and 3, and 3 and 6. out of these only 2 and 3 is given as a option, so (a) is the right answer.

27. (*a*) Common letter = J [at the same (right) face]

Clearly, S is opposite to V.

28. (*a*) From positions II and III,

Common letters = P and Y

Clearly, A is opposite to L.

29. (*a*) In a cube, any pair of adjoining sides will have two common adjoining sides which will be opposite to each other. In the given question, these two sides are A and H. Hence, it is opposite to A.

30. (*c*) From, positions I and II,

Common letters = M and S

Clearly, W is opposite to D.

31. (*a*) From both the positions I and II,

Common colour = White (at different faces)

From position I (clokwise)	White	Blue	Green
From position II	White	Yellow	Black

Clearly, green is opposite to black. It means green is at the bottom, if black is at the top.

32. (*d*) From the given four positions of a single dice, Faces adjacent to face having green colour

= Orange, red, white, silver

Clearly, violet is opposite to green.

Type 2 Questions Related to Unfolded Dice

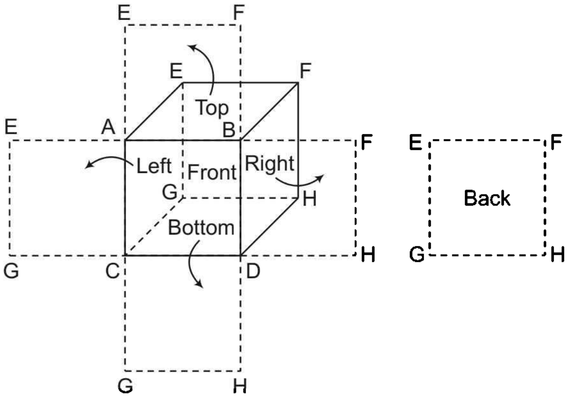
In this type of questions a figure of unfolded dice with design/symbols/signs/ figure etc., is given and candidates are required to pick a dice (to be formed with the given unfolded dice) out of the given options.

Before moving to the question, first learn about a unfolded dice.

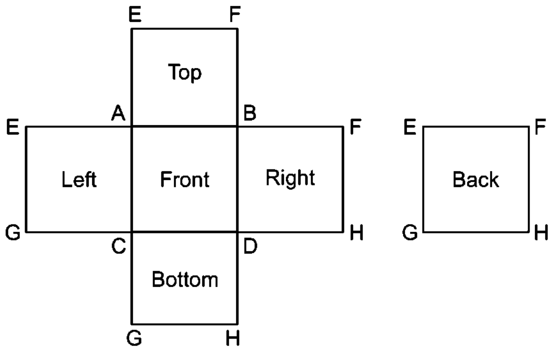
Unfolded Dice

If a dice is supposed to be a closed but hollow object, then its faces can be converted into a two dimensional object by unfolding the given dice. The following figure is unfolded form of a dice.

This dice has been unfolded by supposing front as base.

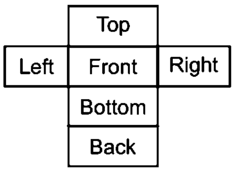


In the above figure, the unfolding process of the dice has been shown. The unfolded form of the dice looks like as the figure given below

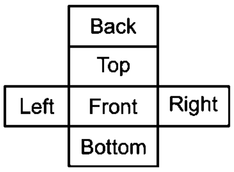

E
F
Top
E
A
B
F
E
F
Left
Front
Right
Back
G
C
D
H
G
H
Bottom
G
H

In the above figure, the dice has been unfolded by supposing front face as base. The back face (the face opposite to front face) to be shown separately, can be added to remaining four faces as each face is attached to four other faces. Except front face, the back face is also attached to four other faces. If the unfolded dice form attached with the back face has to be presented, then following four presentations can be possible

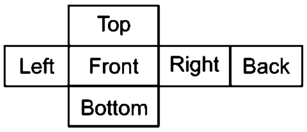
Case I


Top
Left
Front
Right
Bottom
Back

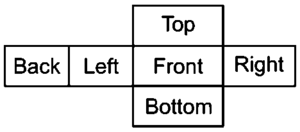
Case II


Back
Top
Left
Front
Right
Bottom

Case III


Top
Left
Front
Right
Back
Bottom

Case IV


Top
Back
Left
Front
Right
Bottom

Opposite Faces of Unfolded Dice

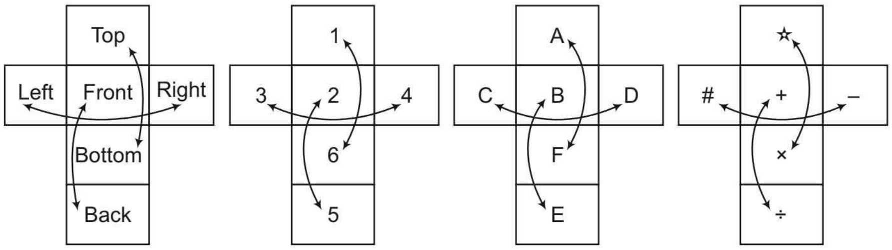
- Top face is opposite to bottom face.
- Left face is opposite to right face.
- Front face is opposite to back face.
- Bottom face is opposite to top face.
- Right face is opposite to left face.
- Back face is opposite to front face.

If the top, bottom, left, right, front and back faces of a dice are denoted by letter/digits, then opposite faces are as below

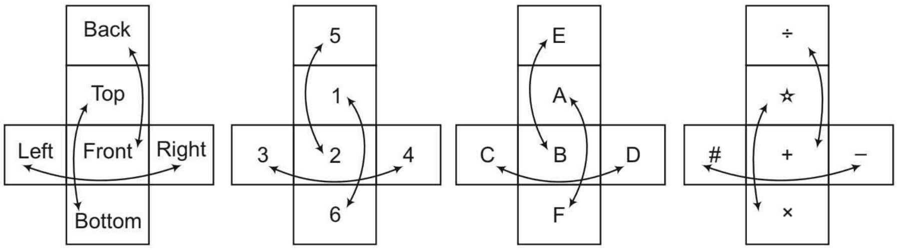
In the form of words		In the form of Letters		In the form of digits		In the form of Symbols	
Face	**Opposite face**	**Face**	**Opposite face**	**Face**	**Opposite face**	**Face**	**Opposite face**
Top	Bottom	A	F	1	6	☆	×
Bottom	Top	F	A	6	1	×	☆
Front	Back	B	E	2	5	+	÷
Back	Front	E	B	5	2	÷	+
Left	Right	C	D	3	4	#	–
Right	Left	D	C	4	3	–	#

The unfolded form of above letters/digits/symbols with respect to the unfolded patterns of dice can be shown as

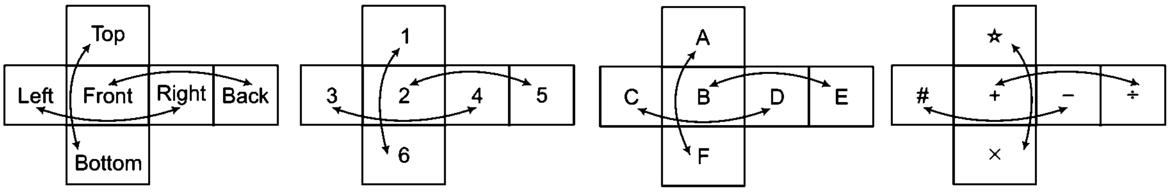
***Case* I**


Top
Left
Front
Right
Bottom
Back
1
3
2
4
6
5
A
C
B
D
F
E
☆
#
+
–
×
÷

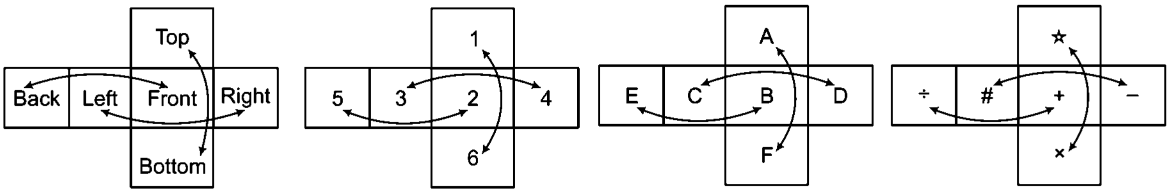
***Case* II**


Back
Top
Left
Front
Right
Bottom
5
1
3
2
4
6
E
A
C
B
D
F
÷
☆
#
+
–
×

***Case* III**

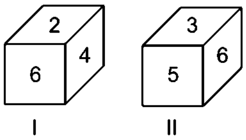

Top
Left
Front
Right
Back
Bottom
1
3
2
4
5
6
A
C
B
D
E
F
☆
#
+
–
÷
×

***Case* IV**


Top
Back
Left
Front
Right
Bottom
1
5
3
2
4
6
A
E
C
B
D
F
☆
÷
#
+
–
×

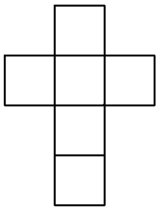
How to Fill Unfolded Faces with Digits?

When the unfolded faces of any dice is filled up with digits/numbers, then any question based on dice can be solved very easily. Two positions of a dice are given below and by the help of these dice, the unfolded faces have been filled up by the digits.

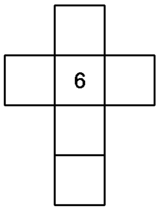


➘ Atleast two positions of dice must be given to fill the unfolded faces.

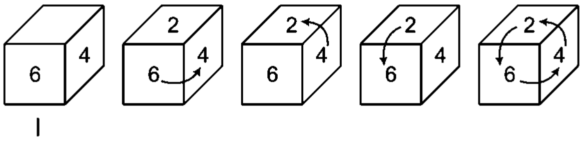
Now, we will form the following unfolded figure with the help of the above mentioned positions of dice.



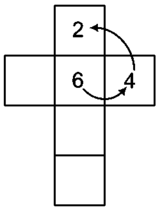
Now, the common digit (6) in both the positions will be written at the face second from the top which is between left and right faces. *Let us see*



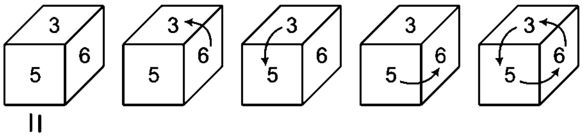
Now, going anti-clockwise direction from the common digit 6 of position I, we get 4 first and after that, we get 2.
Let us see



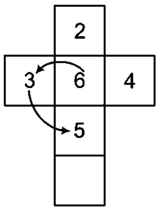
At the unfolded faces, 4 and 2 are written as following way



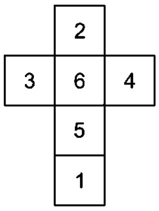
Again, going towards anti-clockwise direction from the common digit 6 of position II, we get 3 first and after that 5.
Let us see



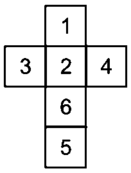
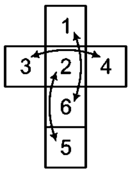
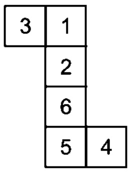
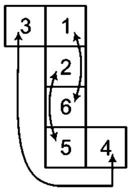
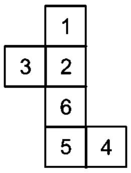
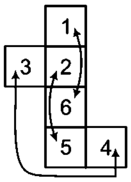
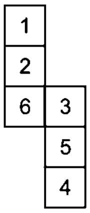
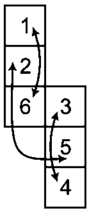
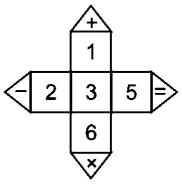
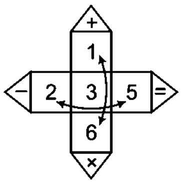
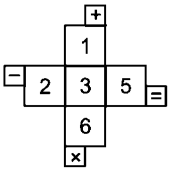
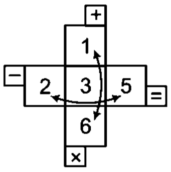
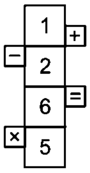
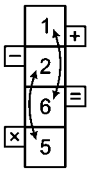
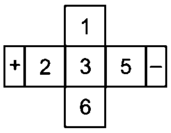
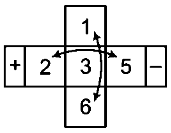
At the unfolded faces, 3 and 5 are written as follows



Now, the remaining blank face is filled up with the hidden digit 1 and now all the unfolded faces look like as below



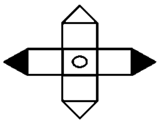
Some unfolded patterns of a dice are given below

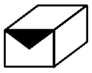
Unfolded Faces		Opposite Faces
		1 and 6 are opposite 2 and 5 are opposite 3 and 4 are opposite
		1 and 6 are opposite 2 and 5 are opposite 3 and 4 are opposite
		1 and 6 are opposite 2 and 5 are opposite 3 and 4 are opposite
		1 and 6 are opposite 2 and 5 are opposite 3 and 4 are opposite
		1 and 6 are opposite 2 and 5 are opposite + − = × and 3 are opposite
		1 and 6 are opposite 2 and 5 are opposite 3 and − + × = are opposite
		1 and 6 are opposite 2 and 5 are opposite = + and I × are opposite
		1 and 6 are opposite 2 and 5 are opposite 3 and + − are opposite

To give the better idea about the type of questions, illustrations are explained below

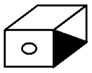
Directions (Example Nos. 19-24) In the questions below an unfolded dice is given in the left side while in the right side, four answer choices are given in the form of complete dice. You are required to select the correct answer choice which is formed by folding the unfolded dice.

***Ex* 19** **Unfolded Dice** **Answer Choices**

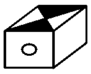




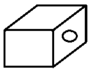
(a)



(b)



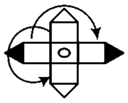
(c)



(d)

Sol. (*d*) According to the question,

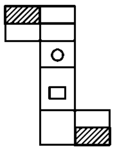
After the observation of unfolded figure, we find that option (d) is correct to answer.

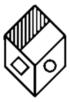


So, two blank faces of cube is opposite to two another blank faces.

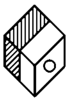
And, is opposite to .

***Ex* 20**

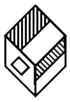




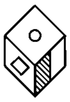
(a)



(b)

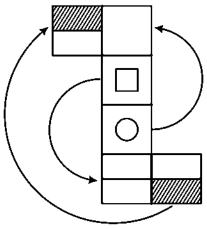


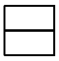
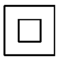
(c)

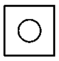
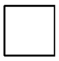


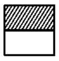
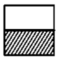
(d)

Sol. (*a*) According to the question,



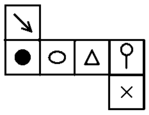
So,  is opposite to 

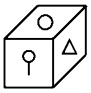
 is opposite to 

and  is opposite to 

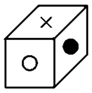
Clearly, option (a) is correct answer because when unfolded cube will be folded, only the cube in figure (a) can be formed.

***Ex* 21**

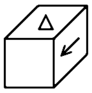




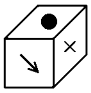
(a)



(b)

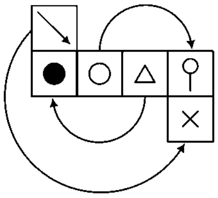


(c)



(d)

Sol. (*b*) According to the question,



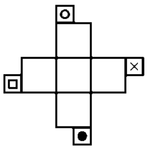
So, ↘ is opposite to ×

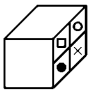
● is opposite to △

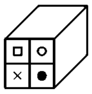
and ○ is opposite to ♀

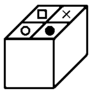
Hence, only the cube in figure (b) can be formed, when unfolded cube will be folded.

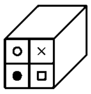
Ex **22**



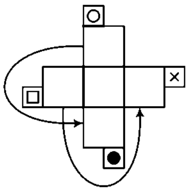

(a)


(b)

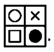

(c)


(d)

Sol. (*a*) According to the figure,

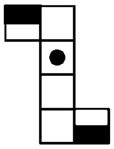


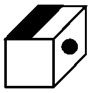
So, two blank sides of cube are opposite to two another blank sides

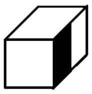
and ☐ is opposite to .

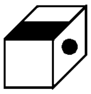
Hence, only option (a) is correct which gives the exact sequence of symbols opposite to the blank face of cube.

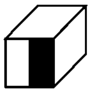
Ex **23**




I

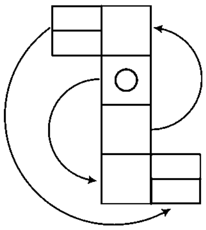

II


III


IV

(a) I and II (b) II and III (c) I, II and III (d) I, II, III and IV

Sol. (*d*) According to unfolded dice,



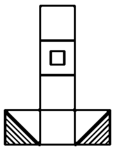
So, ⊟ is opposite to ⊟

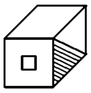
☐ is opposite to ☐

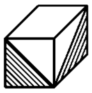
and ⧇ is opposite to ☐

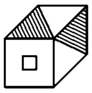
Clearly, all the cubes I, II, III and IV can be formed.

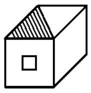
Ex **24**




I

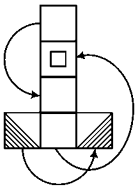

II


III


IV

(a) I and II (b) III and IV (c) I and IV (d) I, II, III and IV

Sol. (*c*) As unfolded dice is given,



So, ☐ is opposite to ☐

⧈ is opposite to ☐

and ▧ is opposite to ▨

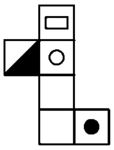
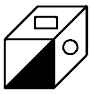
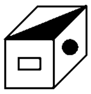
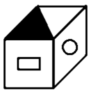
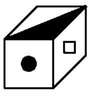
Hence, option (c) has the correct cubes, which can be formed when unfolded figure will be folded.

Practice Corner **8.2**

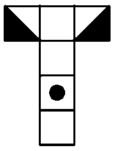
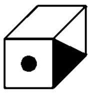
Build your Confidence...

Directions (Q. Nos. 1-29) In the each question given below an unfolded dice is given in the left side while in the right side, four answer choices are given in the form of complete dices. You are required to select the correct answer choice(s) which is/are formed by folding the unfolded dice.

1. **Unfolded Dice** **Answer Choices**



(a)

(b)

(c)

(d)

2.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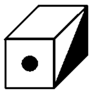
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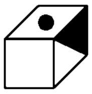
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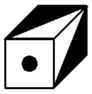
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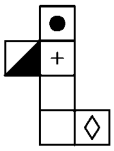
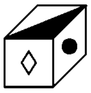
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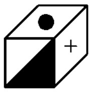
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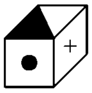
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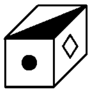
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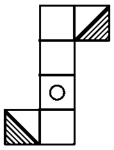
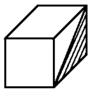
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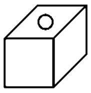
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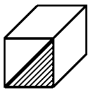
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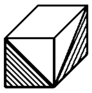
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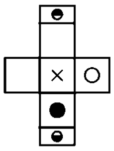
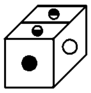
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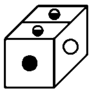
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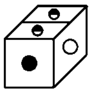
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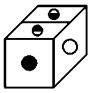
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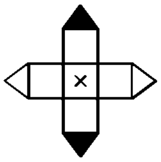
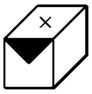
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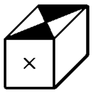
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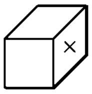
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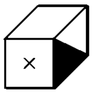
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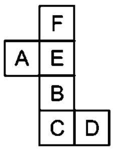

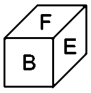

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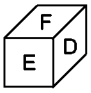

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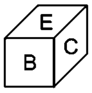

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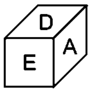
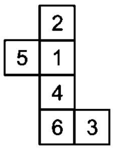
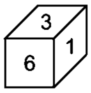


(d)

[SSC (CGL) 2013]

8. **Unfolded Dice** **Answer Choices**





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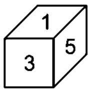

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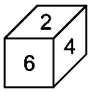

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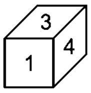
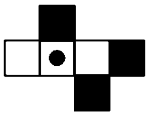
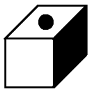


(d)

[CMAT 2013]

9.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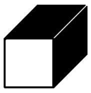
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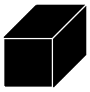
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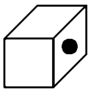
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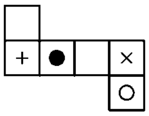
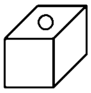
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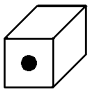
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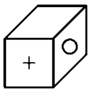
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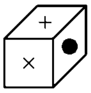
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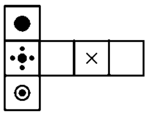
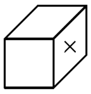
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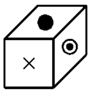
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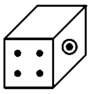
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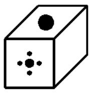
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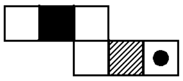
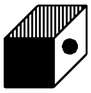
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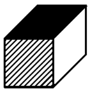
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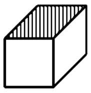
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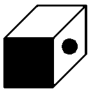
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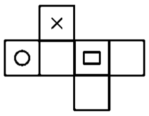
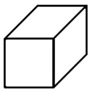
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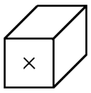
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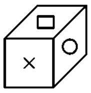
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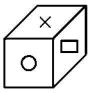
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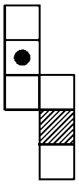
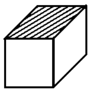
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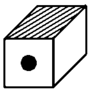
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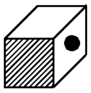
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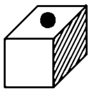
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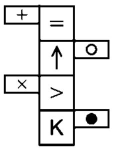

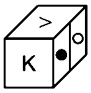

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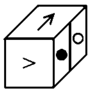
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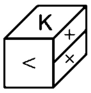

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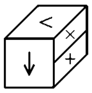
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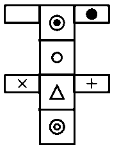
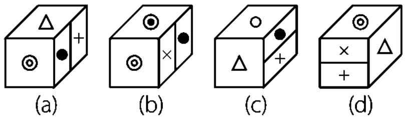
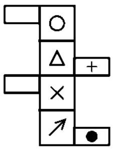
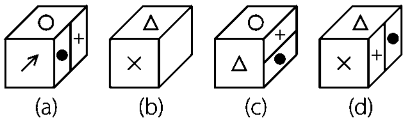
16. **Unfolded Dice** **Answer Choices**



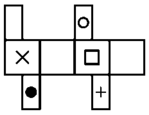

(a) (b) (c) (d)

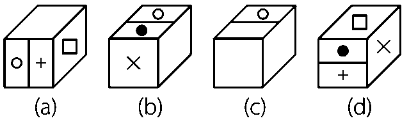
17.



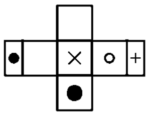

(a) (b) (c) (d)

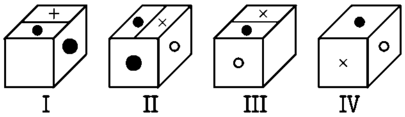
18.




(a) (b) (c) (d)

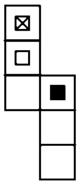
19.

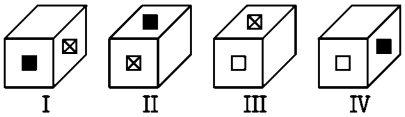



I II III IV

(a) I, II and III (b) II, III and IV (c) I, II and IV (d) I, III and IV

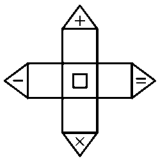
20.

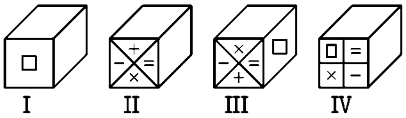



I II III IV

(a) I and II (b) II and III (c) III and IV (d) I, II, III and IV

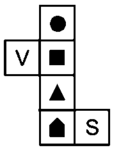
21.

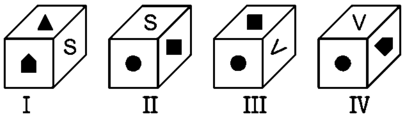



I II III IV

(a) I and II (b) II and III (c) I and III (d) II and IV

22.

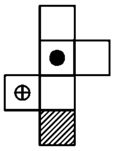


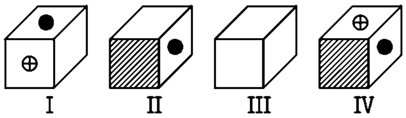


I II III IV

(a) I and II (b) II and III (c) I, II and III (d) I, II, III and IV

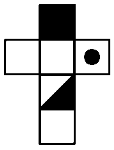
23. **Unfolded Dice** **Answer Choices**

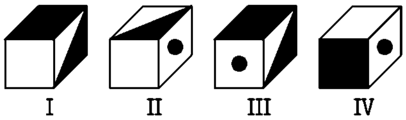



I II III IV

(a) Only I (b) II and III
(c) III and IV (d) I and IV

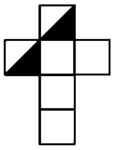
24.

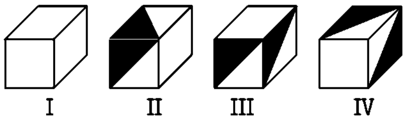



I II III IV

(a) I and II (b) II and III
(c) I and III (d) II and IV

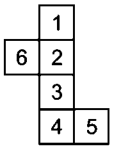
25.

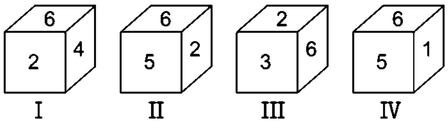



I II III IV

(a) I and II (b) II and III
(c) I and III (d) I and IV

26.

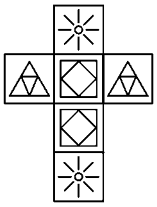


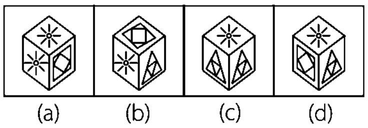


I II III IV

(a) Only I (b) Only II
(c) I and II (d) Only III

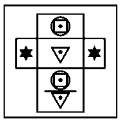
27.

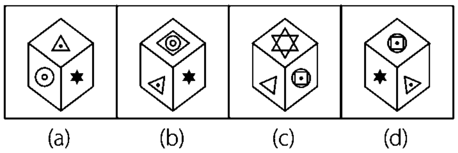



(a) (b) (c) (d)

[SSC (CGL) 2008]

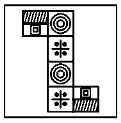
28.



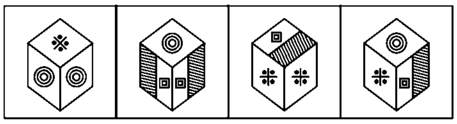

(a) (b) (c) (d)

[SSC (CPO) 2010]

29. Question Figure



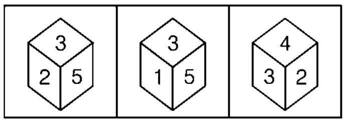
Answers Figures



(a) (b) (c) (d) **[SSC (CGL) 2008]**

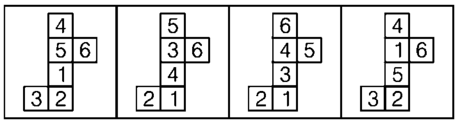
30. Three views of the same cube are given. All the faces of the cube are numbered from 1 to 6. Select one figure which will result when the cube is unfolded. **[SSC (CGL) 2013]**

Question Figures



I II III

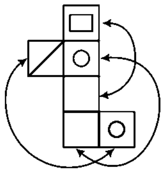
Answers Figures



(a) (b) (c) (d)

Response & Interpretations **(8.2)**

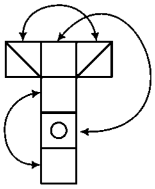
1. (*a*) According to the question,



So, ▣ is opposite to □
○ is opposite to □
and ⧄ is opposite to ○

Clearly, only the cube in figure (a) is correct because when unfolded dice will be folded, this figure will be formed.

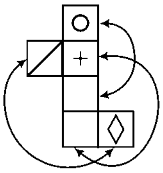
2. (*b*) According to the question,



So, ⧅ is opposite to ⧄
□ is opposite to ○
and □ is opposite to □

Hence, only the cube in figure (b) is correct because when unfolded dice will be folded, only this figure will be formed.

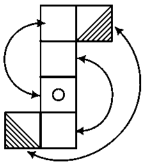
3. (*b*) As per the question,



So, ○ is opposite to □
⊞ is opposite to □
and ⧄ is opposite to ◇

Hence, option (b) will be the correct answer.

4. (*b*) According to the question,

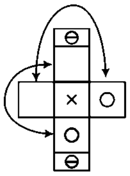


So, two blank faces are opposite to each other

□ is opposite to ○
and ▧ is opposite to ▨

Clearly, option (b) is the correct answer.

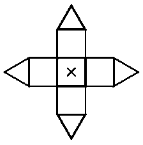
5. (*d*) According to the question,



So, □ is opposite to ○
□ is opposite to ○
and ⊠ is opposite to ⊖⊖

Now, it is clear that only option (d) shows the correct figure of unfolded dice.

6. (*c*) According to the question,

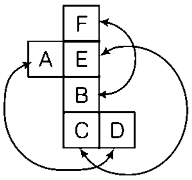


So, two blank faces of cube are opposite to two another blank faces.

and ✕ is opposite to ⊠

Clearly, only option (c) is the correct answer.

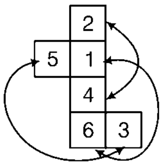
7. (*b*) According to the question,



So, A is opposite to D
B is opposite to F
and C is opposite to E

Hence, only the cube in figure (b) is the correct answer.

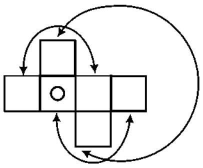
8. (*d*) According to the unfolded dice,



So, 1 is opposite to 6
2 is opposite to 4
and 3 is opposite to 5

Hence, only option (d) is the correct answer because in this no number is opposite to each other.

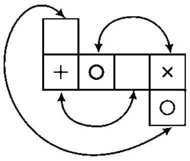
9. (*b*) According to the question,



So, ☐ is opposite to ☐
☐ is opposite to ☐
and ○ is opposite to ☐

Hence, only the cube figure (a) is the correct answer.

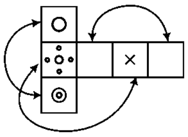
10. (*b*) According to the unfolded dice,



So, ○ is opposite to ☐
+ is opposite to ☐
and ○ is opposite to ×

Clearly, option (b) is the correct answer.

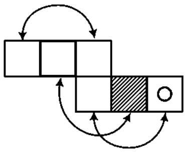
11. (*d*) According to the question



So, ○ is opposite to ◎
☐ is opposite to ☐
and ⁘ is opposite to ×

Now, it is clear that, when unfolded dice will be folded then option (c) having the cube would be correct.

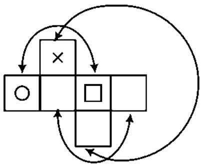
12. (*d*) According to the unfolded dice,



So, two blank faces are opposite to each other
☐ is opposite to ▨
and ☐ is opposite to ○

Hence, only option (d) is correct.

13. (*a*) According to the question,

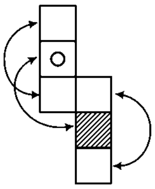


So, ○ is opposite to ▢
× is opposite to ☐

And two blank faces are opposite to each other.

Now, it is clear that only option (a) is correct.

14. (*a*) According to the unfolded dice,

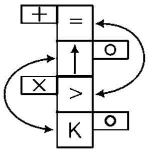


So, two blank faces of cube are opposite to two another blank faces.

And ○ is opposite to ▨

Hence, only the cube figure (a) is the correct answer.

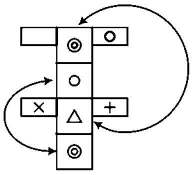
15. (*b*) According to the question,



So, = is opposite to >
↑ is opposite to K
and +/× is opposite to ○/○

Clearly, option (b) is having exact cube when unfolded dice will be folded.

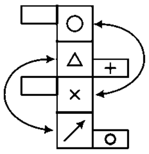
16. (*a*) According to the question,



So, ◎ is opposite to △
○ is opposite to ◎
and ☐/× is opposite to ○/+

Hence, option (a) is the correct answer.

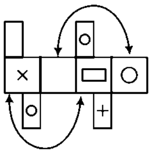
17. (*d*) According to the question,



So, ○ is opposite to ×
△ is opposite to ↗
and ⊟ is opposite to ○/+

Hence, only the cube figure (d) is the correct answer.

18. (*c*) According to the unfolded dice,

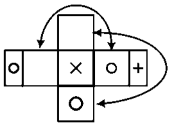


So, × is opposite to ▢
and ☐ is opposite to ☐

And two blank faces are opposite to each other

Now, it is clear that only option (c) is correct.

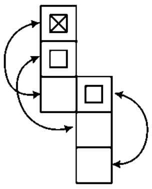
19. (*c*) According to the unfolded dice,



So, ☐ is opposite to ○
☐ is opposite to ○
and × is opposite to ○|+

Hence, option (c) is the correct answer.

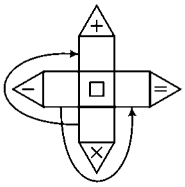
20. (*d*) According to the qusetion,



So, ⊠ is opposite to □
⧈ is opposite to □
and ⧈ is opposite to □

Hence, only option (d) is the correct answer.

21. (*a*) According to the question,

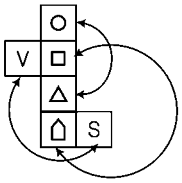


So, two blank faces of unfolded dice is opposite to another two blank faces.

And ⧈ is opposite to ⊠

Clearly, option (a) is having the correct cubes.

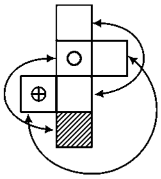
22. (*d*) As per the question,



So, ○ is opposite to △
⧈ is opposite to ⌂
and V is opposite to S

Now, it is clear that all cubes I, II, III and IV can be formed by folding the dice.

23. (*a*) According to the question,

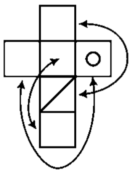


So, two blank faces are opposite to each other

Same as, ○ is opposite to ▨
and ⊕ is opposite to □

Hence, only cube figure I *i.e.,* option (a) is correct.

24. (*d*) According to the question,



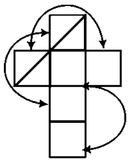
So, □ is opposite to ⧄

So, two blank faces are opposite to each other.

And □ is opposite to ○

Hence, only figure II and IV are corect.

25. (*d*) According to the unfolded dice,

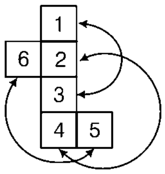


So, ⧄ is opposite to □
and ⧄ is opposite to □

And two blank faces are opposite to each other.

Now, it clear that figure I and IV can be formed.

26. (*d*) According to the unfolded dice,



So, 1 is opposite to 3
2 is opposite to 4
and 5 is opposite to 6

Clearly, Option (d) is the correct answer.

27. (*d*) When the question figure is folded into a box it will look like answer figure (d).

28. (*b*) When the question figure is folded into a box it will look like answer figure (b).

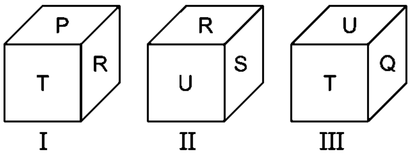
29. (*d*) Clearly, the similar figures will be on the opposite faces of one another.

30. (*d*) If we fold the option (a) the number 2 will lie opposite (5).
If we fold the option (b) the number (1) will lie opposite (3).
If we fold the option (c) the number (2) will lie opposite (5).
Therefore, answer figure (d) is correct.

Master Exercise

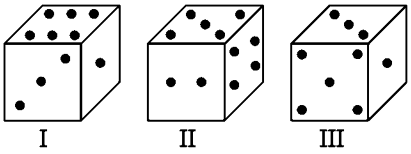
Take a Leap...

1. From the given three positions of a single dice, find the letter at the face opposite to the face having letter Q. **[MAT 2011]**


P
R
T
R
S
U
U
Q
T
I
II
III

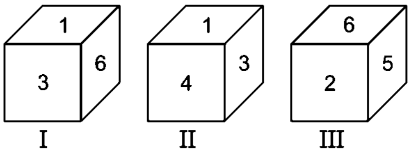
(a) P (b) R (c) S (d) T

2. From the given three positions of a single dice, find the number of dots at the face opposite to the face having 5 dots. **[RRB (ASM) 2010]**



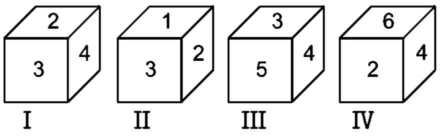
(a) 1 (b) 2 (c) 4 (d) 6

3. From the given three positions of a single dice, find the digit at the face opposite to the face having digit 4. **[MAT 2007]**


1
6
3
1
3
4
6
5
2
I
II
III

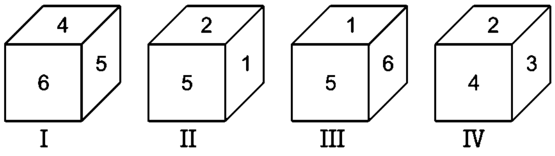
(a) 1 (b) 2 (c) 5 (d) 6

4. A die has numbers 1, 2, 3, 4, 5 and 6 on its faces. Four positions of die are shown belwo. The number on the face opposite to the number 3, is **[CG PSC 2013]**


2
4
3
1
2
3
3
4
5
6
4
2
I
II
III
IV

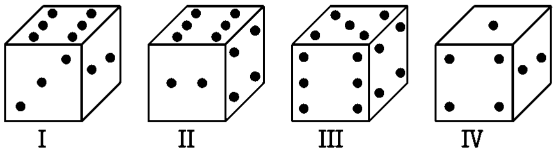
(a) 4 (b) 5 (c) 6 (d) 1
(e) 2

5. From the given four positions of a single dice, find the digit at the face opposite to the face having digit 4. **[MAT 2010]**


4
5
6
2
1
5
1
6
5
2
3
4
I
II
III
IV

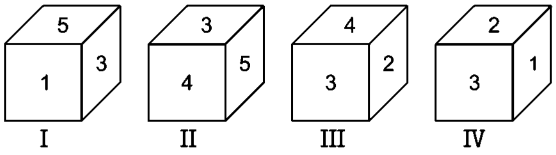
(a) 1 (b) 2 (c) 3 (d) 5

6. From the given four positions of a single dice, find the number of dots at the face opposite to the face having 6 dots. **[SSC (LDC) 2011]**



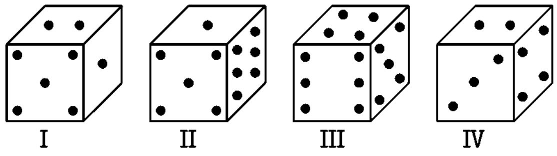
(a) 1 (b) 2 (c) 3 (d) 4

7. From the given four positions of a single dice, find the digit at the face opposite to the face having digit 4. **[MAT 2009]**


5
3
1
3
5
4
4
2
3
2
1
3
I
II
III
IV

(a) 1 (b) 2 (c) 5 (d) 6

8. From the given four positions of a single dice, find the number of dots at the face opposite to the face having 4 dots. **SSC (10+2) 2010]**

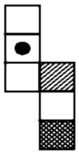


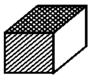
(a) 1 (b) 2 (c) 3 (d) 4

Directions (Q. Nos. 9-14) In each question given below, an unfolded dice is given in the left side while in the right side four answer choices are given in the form of complete dices. You are required to select the correct answer choice(s) which is/are formed by folding the unfolded dice.

Unfolded Dice **Answer Choices**

9.

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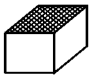
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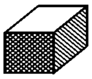
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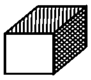
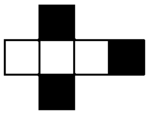
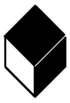

(d)

10.

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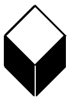
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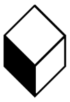
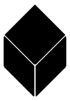
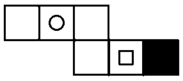
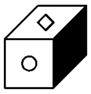

III

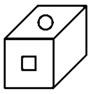

IV

(a) I and II
(b) II and IV
(c) I and IV
(d) III and IV

11.




I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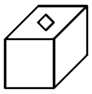
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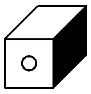
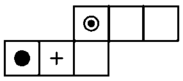
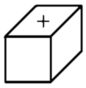
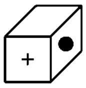

IV

(a) I and II
(b) II and IV
(c) I and IV
(d) III and IV

12.




I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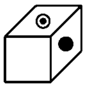
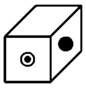
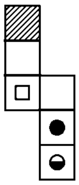
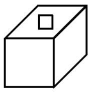

III

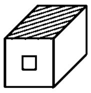

IV

(a) Only I
(b) II and III
(c) I, II and IV
(d) I, II, III and IV

13.




I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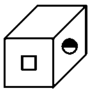
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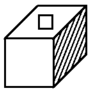
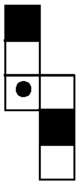
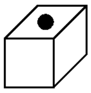
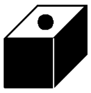

IV

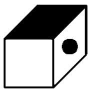
(a) I and II
(b) I and III
(c) II and III
(d) I, II and IV

14.




I


II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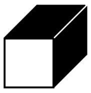
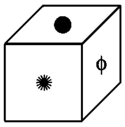
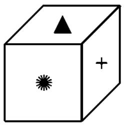

IV

(a) I and II
(b) I and IV
(c) II and IV
(d) I and IV

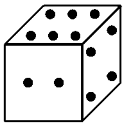
15. From the given two positions of a single dice, find the figure at the face opposite to the face having figure of ϕ. [MAT 2012]

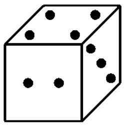

I


II

(a) ✹ (b) Δ (c) 0 (d) +

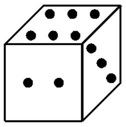
16. From the given two positions of a single dice, find the number of dots at the bottom face, if the top face has 3 dots. [RRB (ASM) 2009]

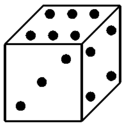

I


II

(a) 2 (b) 3 (c) 4 (d) 6

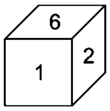
17. From the given two positions of a single dice, find the number of dots at the bottom face, if the top face has 3 dots. [MAT 2010]

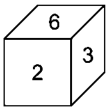

I


II

(a) 1 (b) 5 (c) 6 (d) 1/5

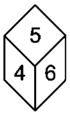
18. Two positions of a cube are given. Based on them find out which number is found opposite number 1 in the given cube. [SSC (CPO) 2010]



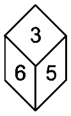


(a) 1 (b) 2 (c) 3 (d) 4

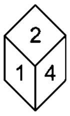
19. Given below are 4 pictures of a cube



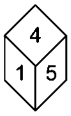
I



II



III



IV

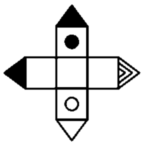
Which number is on the face opposite to 3? [SNAP 2013]

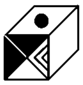
(a) 1 (b) 2 (c) 4 (d) 5

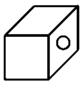
Directions (Q. Nos. 20-25) In each question given below, an unfolded dice is given in the left side while in the right side four answer choices are given in the form of complete dices. You are required to select the correct answer choice(s) which is/are formed by folding the unfolded dice.

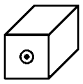
Unfolded Dice **Answer Choices**

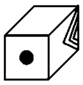
20.




I

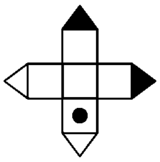

II

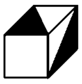

III


IV

(a) I and II (b) II and III (c) III and IV (d) II and IV

21.

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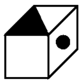
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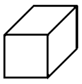
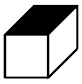
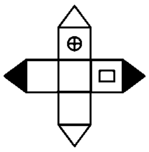
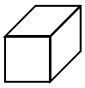

III

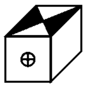

IV

(a) I and II
(b) II and III
(c) III and IV
(d) I and III

22.




I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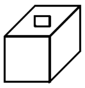
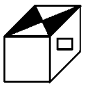
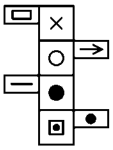
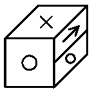

III

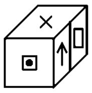

IV

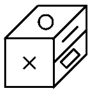
(a) I and III
(b) II and IV
(c) I, II and IV
(d) I, II, III and IV

23.




I


II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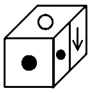
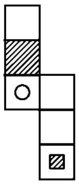
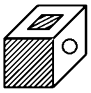

IV

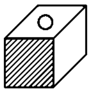
(a) I, II and III
(b) I, III and IV
(c) I and IV
(d) None of the above

Unfolded Dice **Answer Choices**

24.




I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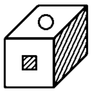
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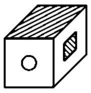
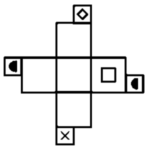
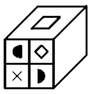

IV

(a) I and II
(b) II and III
(c) I, II and III
(d) I, II, III and IV

25.

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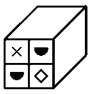
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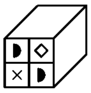
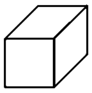
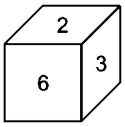

III

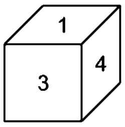

IV

(a) I, II and III
(b) II, III and IV
(c) I, II and IV
(d) I, III and IV

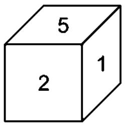
26. Four positions of a dice are given below. Find the digit which is opposite to the 3? **[SSC (10+2) 2012]**



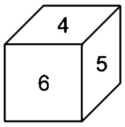
I



II



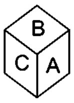
III



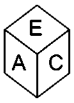
IV

(a) 5 (b) 1 (c) 2 (d) 6

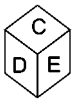
27. Four positions of dice are given below. Which leetter will be opposite to D? **[SSC (Multitasking) 2013]**



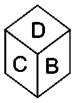
I



II



III



IV

(a) D (b) A (c) B (d) C

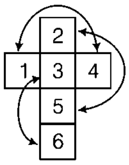
Response & Interpretations (Master Exercise)

1. (*b*) From positions I and III,
Common letter = T (at the same face)
Clearly, R is opposite to Q.

2. (*d*) From positions I and III,
Common dots = 1 and 3
Clearly, 6 dots is opposite to 5 dots.

3. (*d*) From positions I and II,
Common digits = 1 and 3
Clearly, 6 is opposite to 4.

4. (*c*) On unfolding the dice



From the above unfolded dice we find that 6 is opposite to face containing 3.

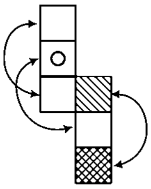
5. (*a*) From positions I and IV,
Adjacent faces of 4 = 2, 3, 5, 6
Clearly, 1 is opposite to 4.

6. (*a*) From positions I and IV,
Common dots = 2 (at the same face)
Clearly, 1 is opposite to 6.

7. (*a*) From positions I and II,
Common digits = 3 and 5
Clearly, 1 is opposite to 4.

8. (*a*) From positions I and IV,
Common dots = 2 (at the same face)
Clearly, 1 dot is opposite to 4 dots.

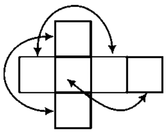
9. (*b*) According to the question,



So, ☐ is opposite to ☐
○ is opposite to ☐
and ▨ is opposite to ▩

Hence, only the cube in figure (b) is correct.

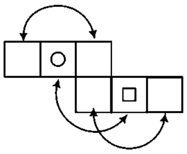
10. (*a*) According to the unfolded dice,



So, ☐ is opposite to ☐
☐ is opposite to ■
and ■ is opposite to ■

Clearly,only option (a) is having the exact cube which can be formed when unfolded cube is folded.

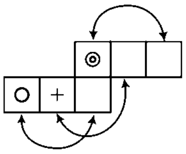
11. (*d*) According to the question,



So, ☐ is opposite to ☐
○ is opposite to □
and ☐ is opposite to ☐

Hence, figure III and IV can be formed.

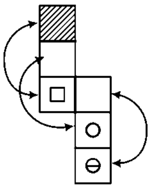
12. (*d*) According to the question,



So, ○ is opposite to ☐
+ is opposite to ☐
and ◎ is opposite to ☐

Hence, all the cube figures can be formed.

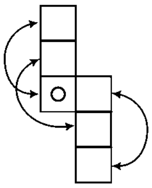
13. (*b*) According to the question,



So, ▨ is opposite to □
☐ is opposite to ○
and ☐ is opposite to ⊖

Hence, only cubes I and III can be formed.

14. (*d*) According to the question,



So, ☐ is opposite to ○
☐ is opposite to ☐
and ☐ is opposite to ☐

Clearly, only cubes I and IV can be formed when unfolded cube is folded.

15. (*d*) From both the positions I and II,
Common figure = ✹ (at the same face)
Clearly, + is opposite to ϕ.

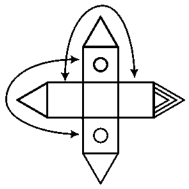
16. (*d*) From both the positions I and II,
Common dots = 2 and 4
Hence, 6 dots will be opposite to 3 dots.
Clearly, 6 will be at the bottom, if 3 dots are at top face.

17. (*d*) From both the positions I and II,
Common dots = 3 and 6.
Hence, 1/5 dots will be opposite to 3 dots.
Clearly, 1/5 dots will be at the bottom face, if 3 dots are at the top face.

18. (*c*) From the two views of cube it is clear that '3' lies opposite to '1'.

19. (*c*) From figures (i), (iii) and (iv), we conclude that 5, 6, 1 and 2 lie adjacent to 4. Hence, 3 must lie opposite 4 and *vice-versa*.

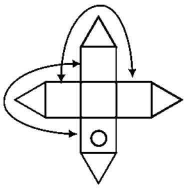
20. (*a*) According to the unfolded dice,



So, ○ is opposite to ○
☐ is opposite to ☐
and ☐ is opposite to ⧄

Clearly, cube figures I and II can be formed.

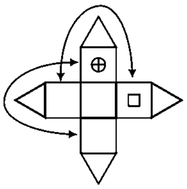
21. (*b*) According to the unfolded dice,



So, ☐ is opposite to ○
☐ is opposite to ☐
and ☐ is opposite to ⊠

Hence, only figure II and III can be formed when unfolded dice is folded.

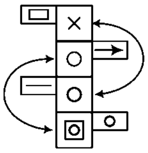
22. (*d*) According to the question,



So, ⊕ is opposite to ☐
☐ is opposite to □
and ☐ is opposite to ⊠

Clearly, option (d) is correct because all cube figures can be formed when the unfolded dice is folded.

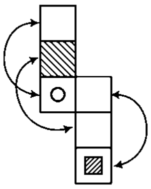
23. (*b*) According to the question,



So, ☒ is opposite to ○
○ is opposite to ⊚
and ⊟ is opposite to ○↑

Hence, option (b) is correct because cube figures I, III and IV can be formed when unfolded dice is folded.

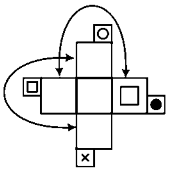
24. (*d*) According to the question,



So, ☐ is opposite to ○
▨ is opposite to ☐
and ☐ is opposite to ▨

Hence, all cube figures can be formed.

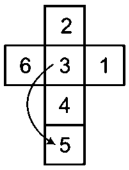
25. (*b*) According to the question,



So, ☐ is opposite to ☐
☐ is opposite to □
and ☐ is opposite to ⊞

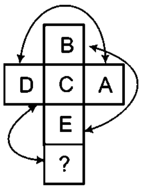
Hence, only the cubes figure II, III and IV can be formed.

26. (*a*) According to the question,



So, opposite of 3 is 5.

27. (*b*) According to the unfolded dice,



From the above unfolded dice will find that face opposite D is A.

9

Paper Folding

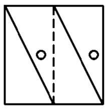
Paper Folding is a process in which a piece of paper (with certain embedded design pattern) is folded along a certain dotted line and it is asked to select the correct folded pattern.

Questions based on 'Paper Folding' comprise of a question figure representing a transparent sheet and four answer figures. The transparent sheet contains some figural pattern and one/more dotted lines. These dotted lines indicate the axis (axes) along which the paper is folded. A candidate is asked to choose an option from the given set of options, which would resemble the design that appears on the transparent sheet after folding.

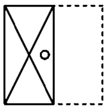
Let us consider an example

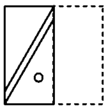
e.g., Find the pattern which will appear on the transparent sheet after it is folded along the dotted line

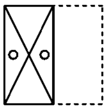
Transparent Sheet

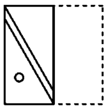


Answer Figures


(a)

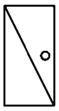

(b)


(c)

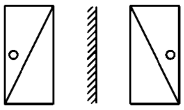

(d)

Sol. (c) The right half of the sheet is to be folded along the dotted line, so that its design will get superimposed on the design on the left side of transparent sheet.

Now, on consider the right side *i.e.,*

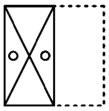


If a mirror is kept on left side of this image/pattern, then it would like as



To obtain the pattern after the folding of transparent sheet, we should superimpose the mirror image of right half of sheet on the left half.

So, the folded pattern would look like as



Hence, option (c) is the correct answer.

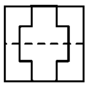
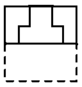
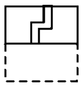
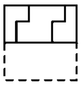
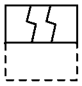
Memory *Add-ons*

Consider a mirror placed on the dotted line facing the portion/part which is to be folded and the mirror image thus obtained is superimposed on the design of the other side to get the folded pattern.

Let us see the illustrative examples given below that will give a better idea about such problems

Directions (Example Nos. 1-8) In each of the questions given below, a transparent sheet having some design on either side of dotted line is given. This figure is followed by four answer figures marked (a), (b), (c) and (d). One out of these four alternatives is obtained by folding the transparent sheet along the dotted line. You are required to choose the correct option.

Ex **1** **Transparent Sheet** **Answer Figures**

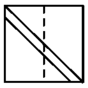
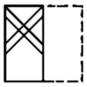
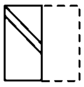
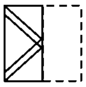
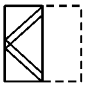






(a) (b) (c) (d)

Sol. (*a*) The lower half of the transparent sheet is folded along the dotted line and placed on the upper half of the transparent sheet.

The design on both the halves are identical. Hence, option (a) resembles the pattern formed when the transparent sheet is folded along the dotted line.

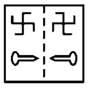
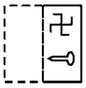
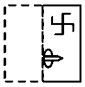
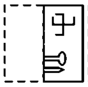
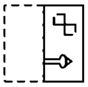
Ex **2** **Transparent Sheet** **Answer Figures**

(a) (b) (c) (d)

Sol. (*c*) It is clear that right half of the transparent sheet is folded along the dotted line and is placed on the left half. The figure, thus obtained resembles the figure as shown in option (c).

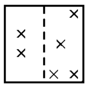
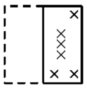
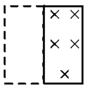
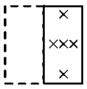
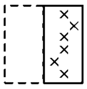
Ex **3** **Transparent Sheet** **Answer Figures**

(a) (b) (c) (d)

Sol. (*a*) Clearly, the left half of the transparent sheet is folded along the dotted line and placed on the right half. The resultant figure, thus obtained resembles the option (a).

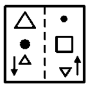
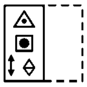
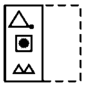
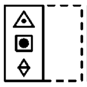
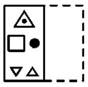
Ex **4** **Transparent Sheet** **Answer Figures**

(a) (b) (c) (d)

Sol. (*a*) The left half of the transparent sheet is folded along the dotted line and placed on the right half of the sheet. The figure, thus obtained resembles the answer figure (a).

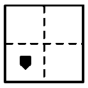
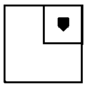
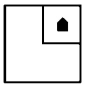
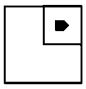
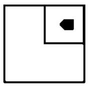
Ex **5** **Transparent Sheet** **Answer Figures**

(a) (b) (c) (d)

Sol. (*a*) The right half of the transparent sheet is folded along the dotted line and placed on the left half of the sheet. The figure, thus obtained resembles the answer figure (a).

Ex **6** **Transparent Sheet** **Answer Figures**

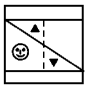
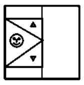
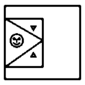
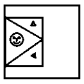
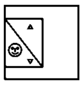






(a) (b) (c) (d)

Sol. (*b*) The lower half of the transparent sheet is folded along the dotted line and placed on the upper half of the sheet.

Then, the left half of the sheet is folded along the dotted line and placed on the right half of the sheet. The figure, thus obtained resembles the answer figure (b).

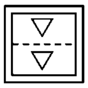
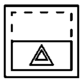
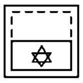
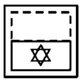
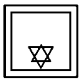
Ex **7** **Transparent Sheet** **Answer Figures**

(a) (b) (c) (d)

Sol. (*a*) The right half of the sheet is folded along the dotted line and placed on the left half of the sheet. The figure, thus obtained resembles the answer figure (a).

Ex **8** **Transparent Sheet** **Answer Figures**

(a) (b) (c) (d)

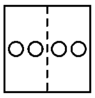
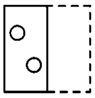
Sol. (*c*) The upper half of the transparent sheet is folded along the dotted line and placed on the lower half of the sheet. The figure, thus obtained resembles the answer figure (c).

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-33) In each of the following questions a figure marked on transparent sheet is given and followed by four answer figures, one out of these four options resembles the figure, which is obtained by folding transparent sheet along the dotted line. This option is your answer.

Transparent Sheet **Answer Figures**

1. 

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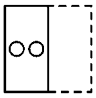
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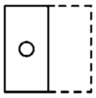
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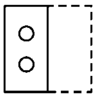
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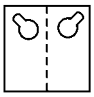
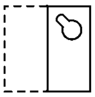
2. 

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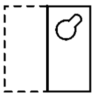
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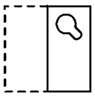
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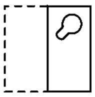
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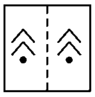
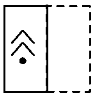
3. 

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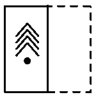
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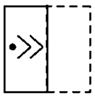
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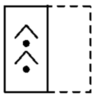
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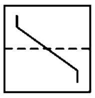
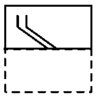
4. 

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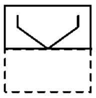
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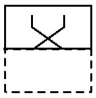
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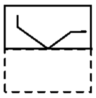
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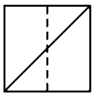
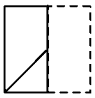
5. 

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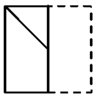
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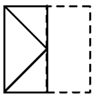
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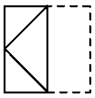
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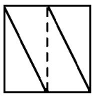
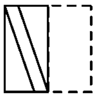
6. 

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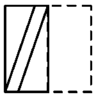
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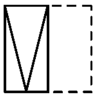
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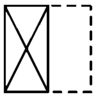
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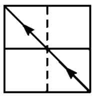
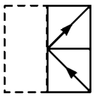
7. 

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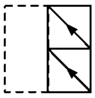
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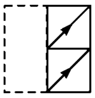
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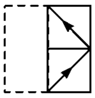
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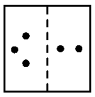
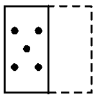
8. 

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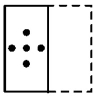
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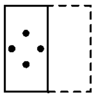
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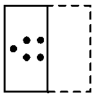
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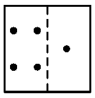
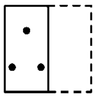
Transparent Sheet **Answer Figures**

9. 

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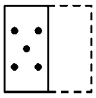
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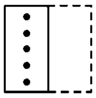
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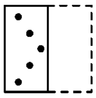
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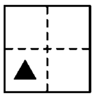
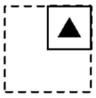
10. 

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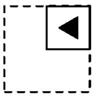
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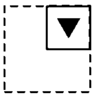
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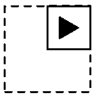
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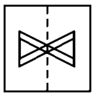
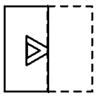
11. 

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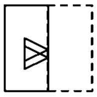
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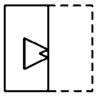
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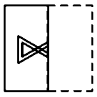
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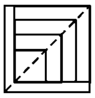
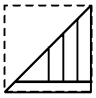
[SSC (CPO) 2007]

12. 

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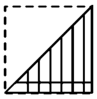
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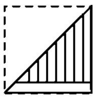
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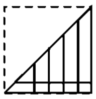
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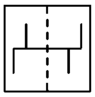
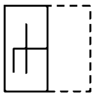
13. 

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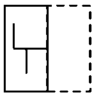
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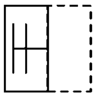
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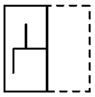
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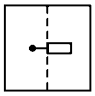
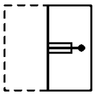
14. 

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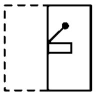
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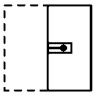
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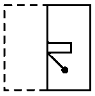
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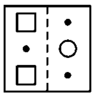
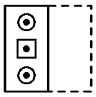
15. 

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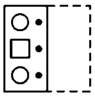
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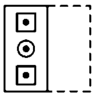
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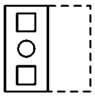
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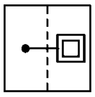
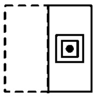
16. 

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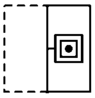
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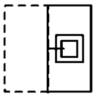
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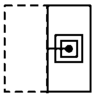
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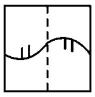
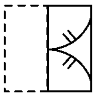
[SSC (10+2) 2009]

Transparent Sheet **Answer Figures**

17.


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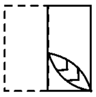
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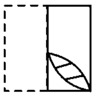
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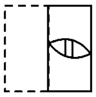
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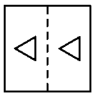
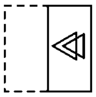
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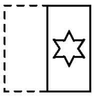
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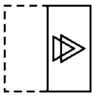
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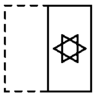
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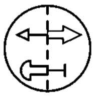
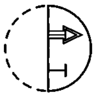
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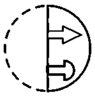
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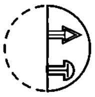
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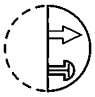
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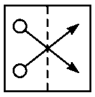
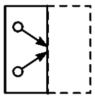
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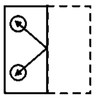
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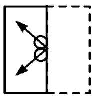
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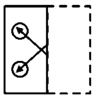
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[SSC (Multitasking) 2012]

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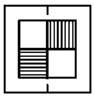
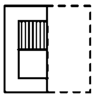
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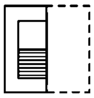
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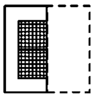
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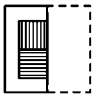
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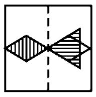
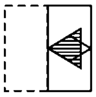
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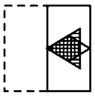
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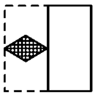
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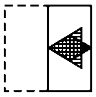
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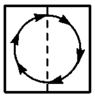
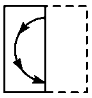
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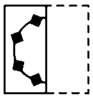
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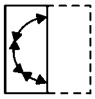
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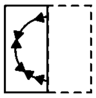
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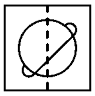
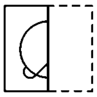
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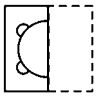
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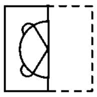
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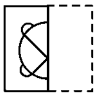
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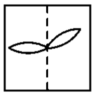
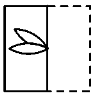
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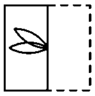
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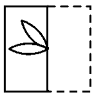
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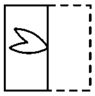
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Transparent Sheet **Answer Figures**

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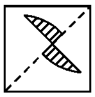
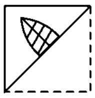
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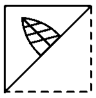
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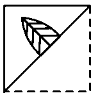
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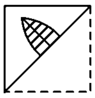
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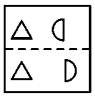
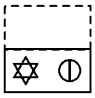
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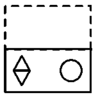
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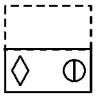
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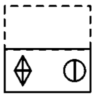
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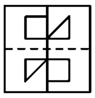
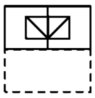
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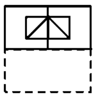
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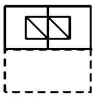
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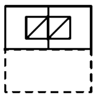
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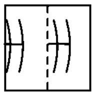
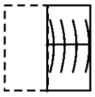
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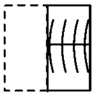
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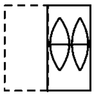
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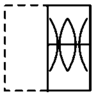
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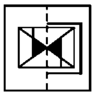
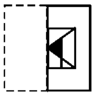
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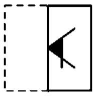
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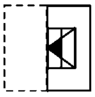
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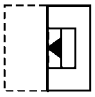
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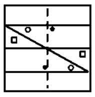
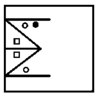
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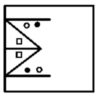
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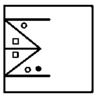
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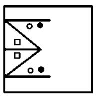
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[SSC (DEO & LDC) 2012]

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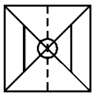
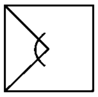
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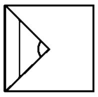
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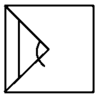
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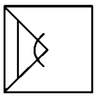
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[SSC (DEO & LDC) 2012]

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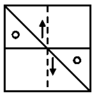
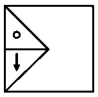
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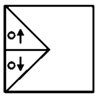
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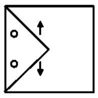
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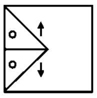

(d)

[SSC (DEO & LDC) 2012]

Response & Interpretations (Master Exercise)

1. (b) **2.** (b) **3.** (a) **4.** (b) **5.** (c) **6.** (d) **7.** (a) **8.** (c) **9.** (b) **10.** (c)
11. (b) **12.** (a) **13.** (c) **14.** (c) **15.** (c) **16.** (d) **17.** (d) **18.** (d) **19.** (c) **20.** (b)
21. (d) **22.** (d) **23.** (c) **24.** (d) **25.** (b) **26.** (d) **27.** (a) **28.** (a) **29.** (d) **30.** (c)
31. (d) **32.** (d) **33.** (d)

10

Paper Cutting

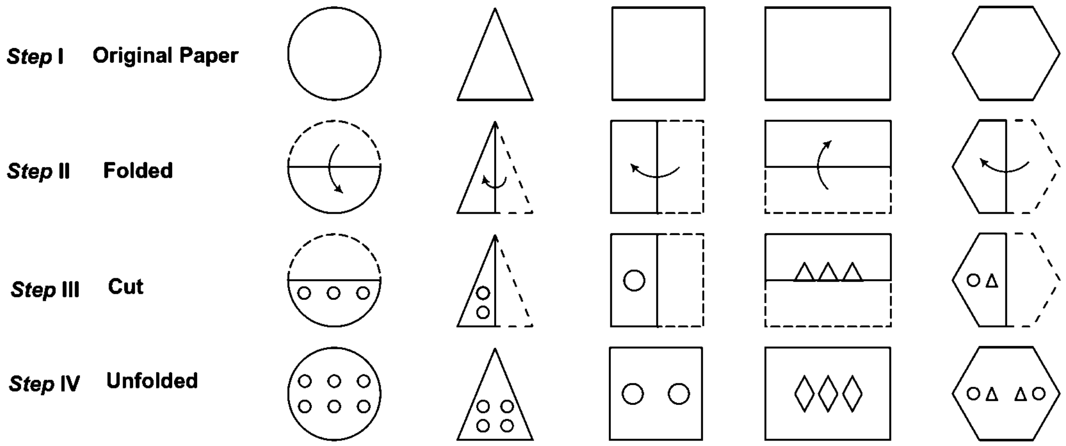
Paper Cutting is a process in which a piece of paper (of any shape) is folded along a certain direction and then cuts are made into it.

Different types of questions covered in this chapter are as follows

- Selecting Unfolded Pattern of a Folded Punched Piece of Paper
- Selecting Folded and Punched Pattern Based on Unfolded Pattern

In questions based on paper cutting, one or more question figures are given showing the manner in which a piece of paper is folded, where a dotted line is the reference line along which the paper has to be folded and the arrow indicates the direction of the fold. Then the paper is punched (cut) from a particular section. Such cuts may be based on varying patterns. These patterns appear on the paper when the paper is unfolded after cutting. The candidates are required to see the question figure(s) carefully and then identify the unfolded paper having correct cutting pattern out of the four answer choices given in the form of figures.

Let us see some figures which are being folded, cut and then unfolded to have a basic idea about the concept of paper cutting



➘ (i) The above presentations depict fold punching (cutting). Questions based on paper cutting may involve multiple folds.

(ii) The cuts that are shown in the above presentations may be in made any form.

Type 1 Selecting Unfolded Pattern of a Folded Punched Piece of Paper

In this type of questions, the order in which a paper is folded and its punching pattern after folding is depicted through a series of question figures. The objective is to select from among the four answer figures, the one which correctly shows the shape of the paper after it is unfolded.

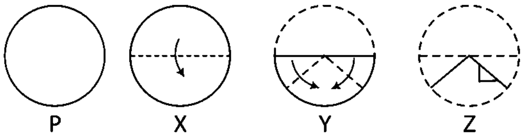
K Memory *Add-ons*

- When more than one fold is made before punching, then virtually try to unfold each fold one by one and predict the complete unfolded pattern.

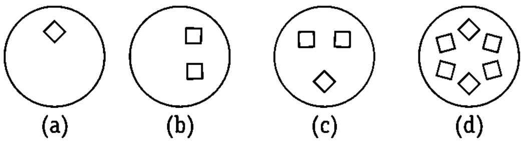
The following examples will give you a better idea about such type of questions

***Ex* 1** The three question figures marked X, Y and Z show the manner in which a piece of paper (P) is folded step by step and then cut. From the answer figures (a), (b), (c) and (d), select the one showing the unfolded pattern of the paper after the cut.

Question Figures



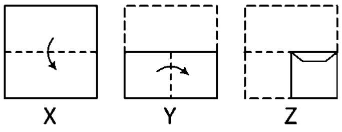
Answer Figures



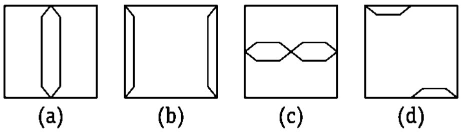
Sol. (*b*) Figure (X) is the first step in which a circular piece of paper is folded from upper to the lower half along the diameter. In figure (Y), both the extreme ends of the figure (X) (after folding) have been folded to form a triangle and then as given in figure (Z), a cut has been marked on the right side. It is clear that this cut will result into two marks, one in the lower half and one in the upper half of the paper, when it is unfolded. Answer figure (b) represents the unfolded shape of the paper after the cut.

***Ex* 2** The three question figures marked X, Y and Z show the manner in which a paper is folded step by step and then cut. From the answer figures (a), (b), (c) and (d), select the one, showing the unfolded shape of the paper after the cut.

Question Figures



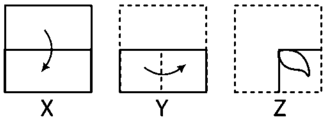
Answer Figures



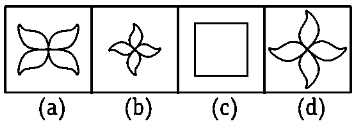
Sol. (*c*) It is clear that in figure (X), the paper has been folded from the upper half to lower half. In figure (Y), the paper has been folded from left to right making it one-fourth of the original size. Now, as given in figure (Z), the cut in made in such a way that the design of the cut will appear along the central line of the page, when it is unfolded. Hence, answer figure (c) represents the correct unfolded shape of the paper after the cut.

***Ex* 3** A piece of paper is folded and cut as shown below in the question figures. From the given answer figures, indicate how it will appear when opened. **[SSC (Steno) 2013]**

Question Figures



Answer Figures

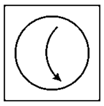


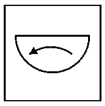
Sol. (*a*) It is clear that in figure (X), the paper has been folded from the upper half to lower half. In figure (Y), the paper has been folded from left to right making it one fourth of the original size.

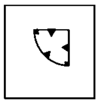
Now, as given in figure (Z), the cut is marked. The design of the cut will appear as in answer figure (a), when it is unfolded. Hence, answer figure (a) represents the correct unfolded shape of the paper after the cut.

Ex **4** A Piece of paper is folded and cut as shown below in the question figures. From the given answer figures figures, indicate how it will appear when opened? **[SSC (CGL) April 2014]**

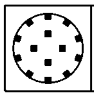
Question Figures

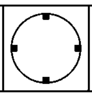

X


Y


Z

Answer Figures


(a)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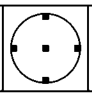
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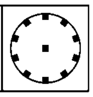

(d)

Sol. (*a*) Figure (X) is the first step in which the circular piece of paper is folded from upper to the lower half along the diameter. In figure (Y), the paper is folded from right to left. Now, cuts have been made as shown is figure (Z).

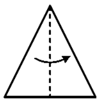
The design made by the cuts will appear as answer figure (a), when it is unfolded. Hence, answer figure (a) represents the correct unfolded position of the circular piece of paper after the cut.

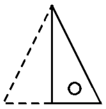
Practice Corner **10.1**

Build your Confidence...

Directions (Q. Nos. 1-34) In each of the following questions a piece of paper is folded in the manner shown in the question figure(s). Select the figure out of the answer choices showing the unfolded pattern after the punches (cut).

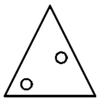
1. Question Figures


X


Y

[UP B. Ed. 2010]

Answer Figures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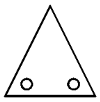
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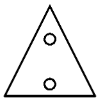
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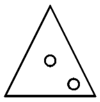
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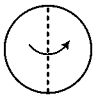
2. Question Figures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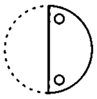
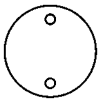

Y

Answer Figures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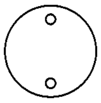
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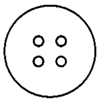
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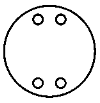
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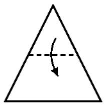
3. Question Figures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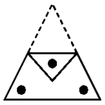
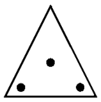

Y

[UP B.Ed. 2012]

Answer figures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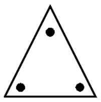
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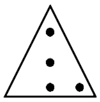
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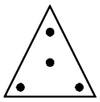
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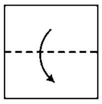
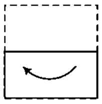
4. Question Figures


X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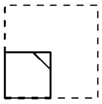
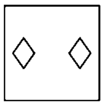

Z

[SSC (CGL) 2013]

Answer figures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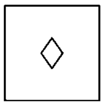
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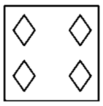
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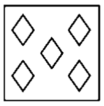
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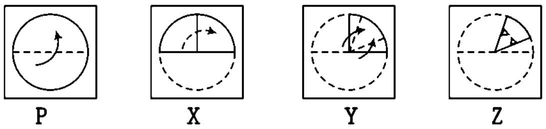
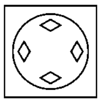
5. Question Figures



[SSC (CPO) 2013]

Answer Figures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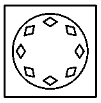
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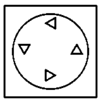
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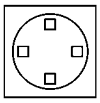
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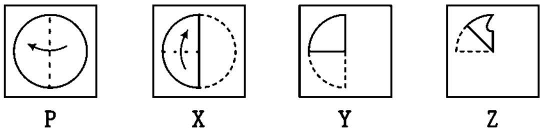
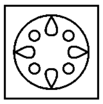
6. Question Figure



[SSC (FCI) 2012]

Answer Figures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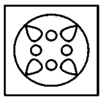
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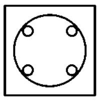
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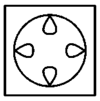
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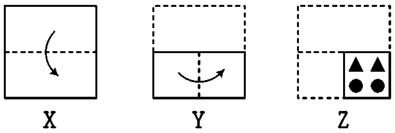
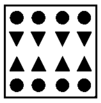
7. Question Figures



[MAT 2009]

Answer Figures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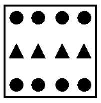
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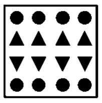
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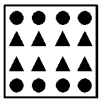
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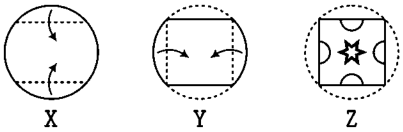
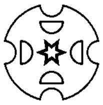
8. Question Figures



Answer Figures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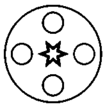
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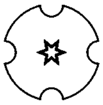
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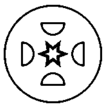
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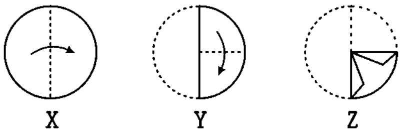
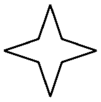
9. Question Figures



Answer Figures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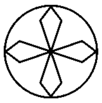
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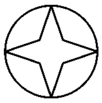
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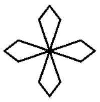
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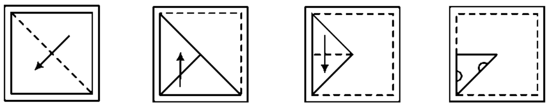
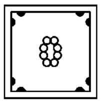
10. Question Figures



[SSC (CGL) 2013]

Answer Figures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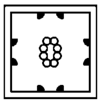
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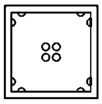
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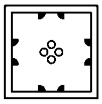
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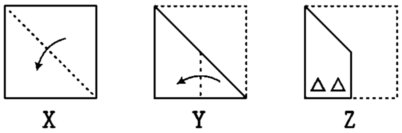
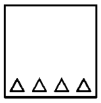
11. Question Figures



Answer Figures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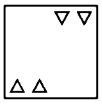
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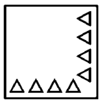
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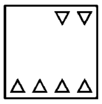
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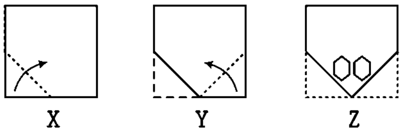
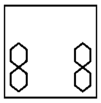
12. Question figures



Answer Figures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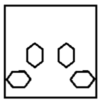
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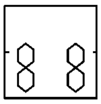
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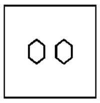
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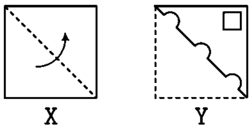
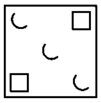
13. Question Figures



Answer Figures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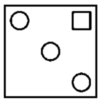
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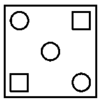
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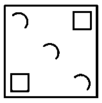
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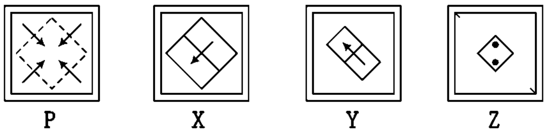
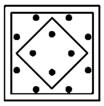
14. Question Figures



Answer figures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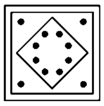
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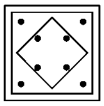
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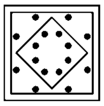
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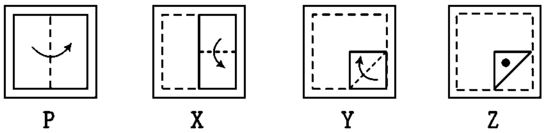
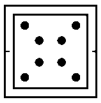
15. Question Figures



[SSC (Multitasking) 2012]

Answer Figures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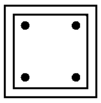
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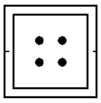
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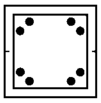
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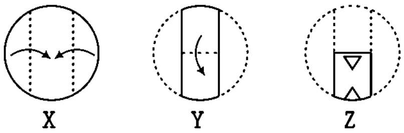
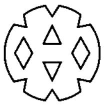
16. Question Figures



Answer Figures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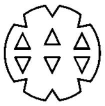
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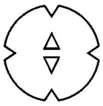
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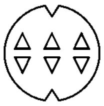
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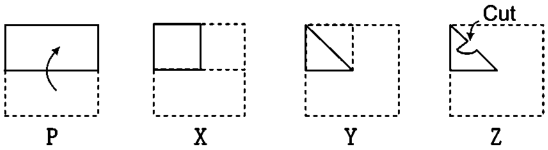
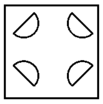
17. Question Figures



[SSC (Multitasking) 2014]

Answer Figures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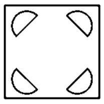
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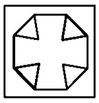
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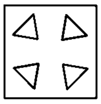
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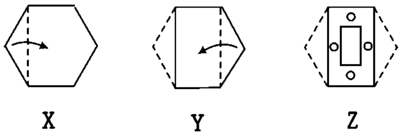
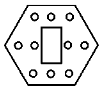
18. Question Figures



Answer Figures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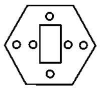
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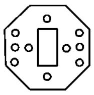
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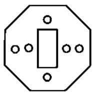
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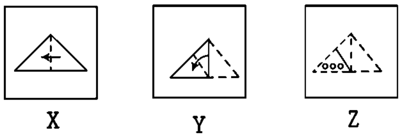
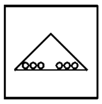
19. Question Figures



[SSC (Steno) 2012]

Answer Figures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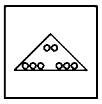
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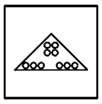
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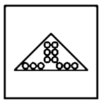
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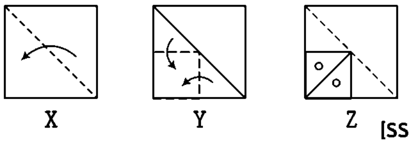
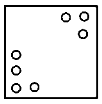
20. Question Figures



[SSC (Multitasking) 2012]

Answer Figures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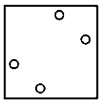
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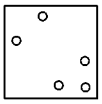
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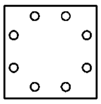
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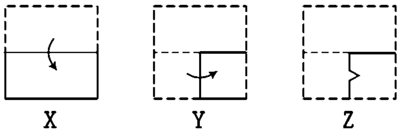
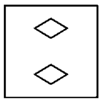
21. Question Figures



[SSC (DEO) 2011]

Answer Figures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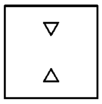
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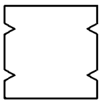
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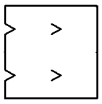
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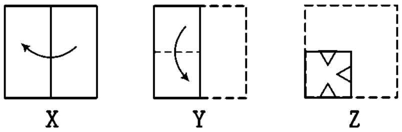
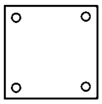
22. Question Figures



[SSC (CGL) 2013]

Answer Figures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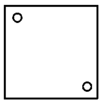
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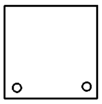
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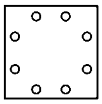
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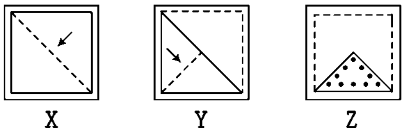
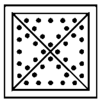
23. Question Figures



Answer Figures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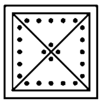
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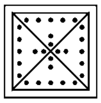
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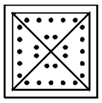
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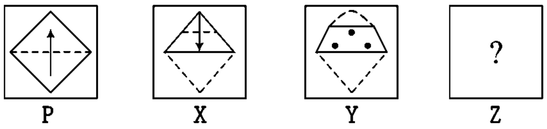
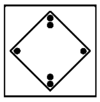
24. Question Figures



[SSC (10+2) 2013]

Answer Figures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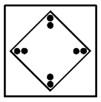
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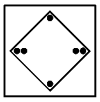
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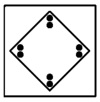
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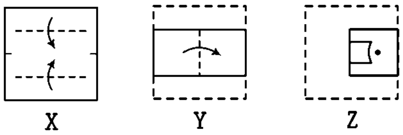
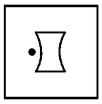
25. Question Figures



[SSC (CGL) 2011]

Answer Figures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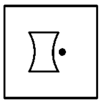
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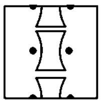
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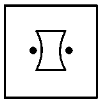
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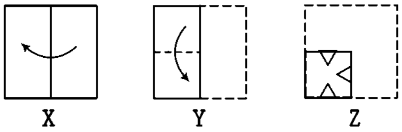
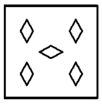
26. Question Figures



[SSC (Constable) 2012]

Answer Figures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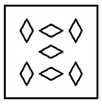
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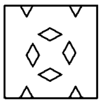
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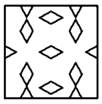
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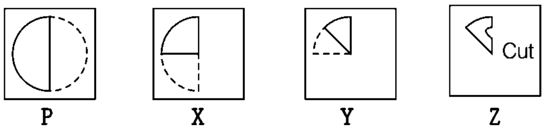
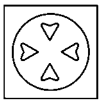
27. Question Figures



[SSC (Multitasking) 2013]

Answer Figures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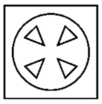
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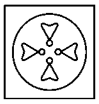
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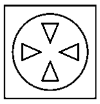
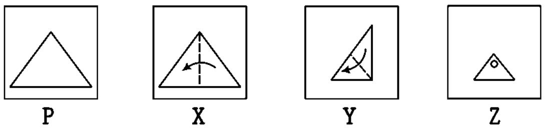
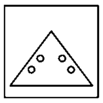

(d)

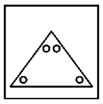
28. Question Figures

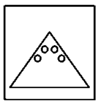


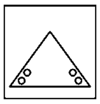
[SSC (Multitasking) 2014]

Answer Figure

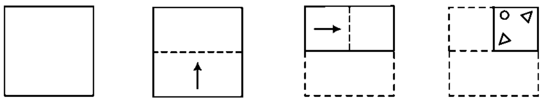

(a)


(b)


(c)

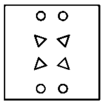

(d)

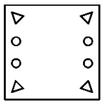
29. Question Figures

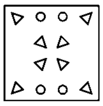


[SSC (10+2) 2013]

Answer Figures


(a)


(b)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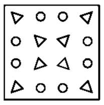
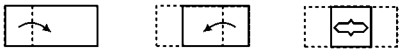
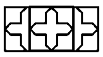
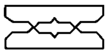

(d)

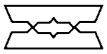
30. Question Figures

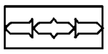


Answer Figures

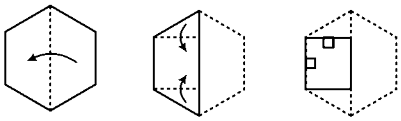

(a)


(b)

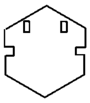

(c)

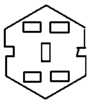

(d)

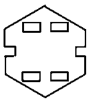
31. Question Figures

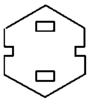


Answer Figures

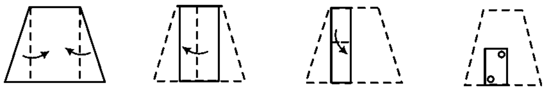

(a)


(b)

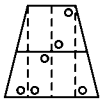

(c)

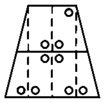

(d)

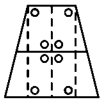
32. Question Figures

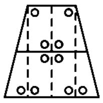


Answer Figures

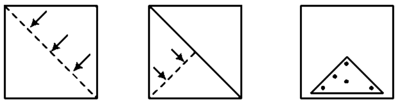

(a)


(b)


(c)

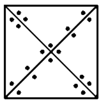

(d)

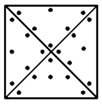
33. Question Figures

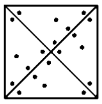


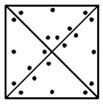
[SSC (Steno) 2012]

Answer Figures

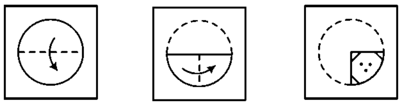

(a)


(b)


(c)

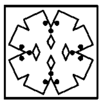

(d)

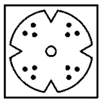
34. Question Figures

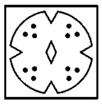


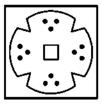
[SSC (FCI) 2012]

Answer Figures


(a)


(b)


(c)


(d)

Response & Interpretations **(10.1)**

1. (b) **2.** (d) **3.** (d) **4.** (b) **5.** (b) **6.** (d) **7.** (a) **8.** (b) **9.** (b) **10.** (c)
11. (c) **12.** (b) **13.** (c) **14.** (d) **15.** (a) **16.** (d) **17.** (a) **18.** (b) **19.** (d) **20.** (d)
21. (a) **22.** (d) **23.** (a) **24.** (d) **25.** (c) **26.** (c) **27.** (a) **28.** (a) **29.** (c) **30.** (b)
31. (a) **32.** (d) **33.** (c) **34.** (c)

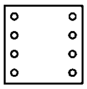
Type 2 Selecting Folded and Punched Pattern Based on Unfolded Pattern

In such type of questions, a question figure is given which represents an unfolded piece of paper with several punches (cuts) made into it along with it, four alternatives representing differently folded and punched paper patterns are also given. The candidate is required to analyse the answer figures to find out the correct folded and punched paper pattern for the given unfolded pattern.

Let us see the following examples to have an idea about this type

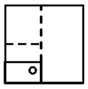
Directions (Example Nos. 5-7) A paper sheet is folded in a particular manner and several punches (cuts) are made. When unfolded the paper sheet looks like the question figure (X). From the given options select the one that follows the manner in which the paper is folded and punched.

***Ex* 5** **Question Figure**

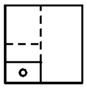


X

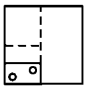
Answer Figures



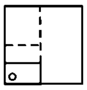
(a)



(b)



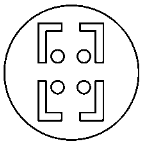
(c)



(d)

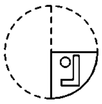
Sol. (*d*) When we fold figure (X), then it looks like answer figure (d).

***Ex* 6** **Question Figure**

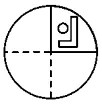


X

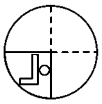
Answer Figures



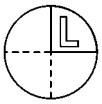
(a)



(b)



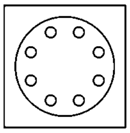
(c)



(d)

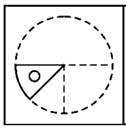
Sol. (*a*) When we fold question figure (X), then it looks like answer figure (a).

***Ex* 7** **Question Figure**

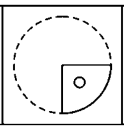


X

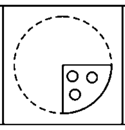
Answer Figures



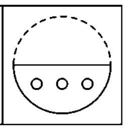
(a)



(b)



(c)



(d)

[SSC (DEO) 2012]

Sol. (*d*) When we fold the question figure, then it looks like as answer figure (d).

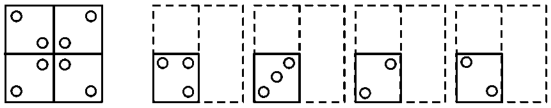
Practice Corner **10.2**

Build your Confidence...

Directions (Q. Nos. 1-14) In each of the following questions, a sheet (square/circle/triangle) of paper is folded and punch is made. When unfolded the paper sheet looks like the question figure. See the answer figures and select the one that follows the manner in which the paper is folded and punch is made.

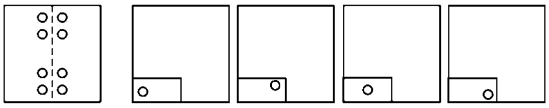
Question Figure **Answer Figures**

1.

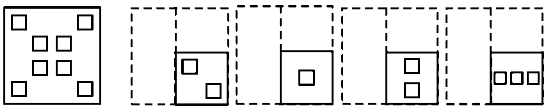


[MAT 2009]

2.

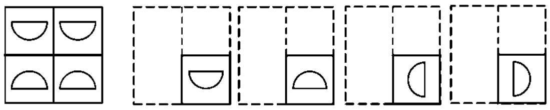


3.

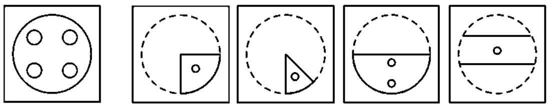


[RRB (TC/CC) 2009]

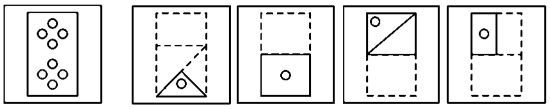
4.



5.

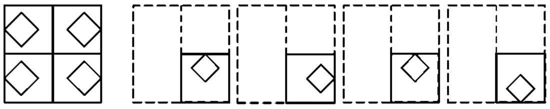


6.



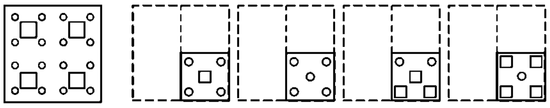
[SSC (10+2) 2006]

7.

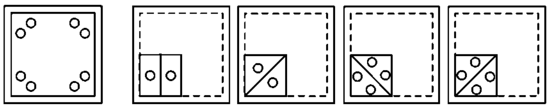


Question Figure **Answer Figures**

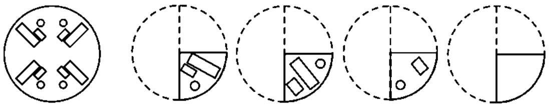
8.



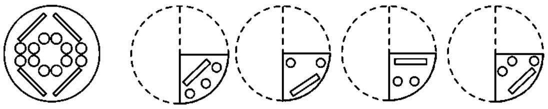
9.



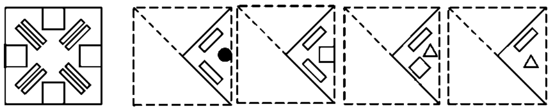
10.



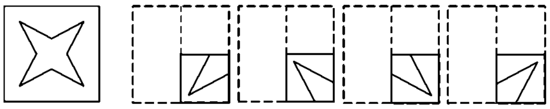
11.



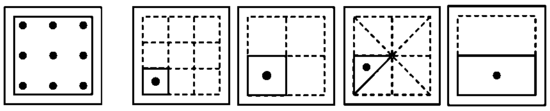
12.



13.



14.



[Railway 2009]

Response & Interpretations **(10.2)**

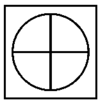
1. (c) **2.** (d) **3.** (a) **4.** (b) **5.** (a) **6.** (a) **7.** (b) **8.** (a) **9.** (b) **10.** (a)
11. (d) **12.** (b) **13.** (c) **14.** (a)

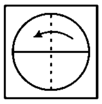
Master Exercise

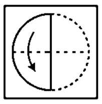
Take a Leap...

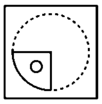
Directions (Q. Nos. 1-34) In each of the following questions, a piece of paper is folded in the manner shown in the question figure(s). Select the figure out of the answer choices showing the unfolded appearance after the cut.

1. Question Figures


W


X


Y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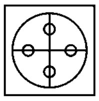
Answer Figures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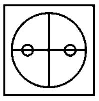
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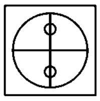
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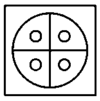
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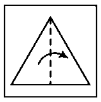
2. Question Figures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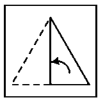
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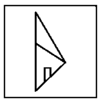
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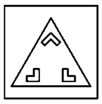
[SSC (Multitasking) 2013]

Answer Figures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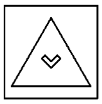
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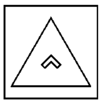
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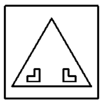
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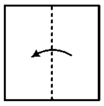
3. Question Figures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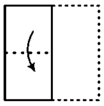
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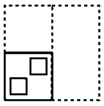
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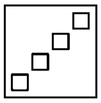
[SSC (CPO) 2013]

Answer Figures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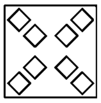
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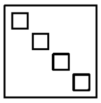
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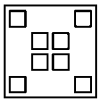
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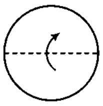
4. Question Figures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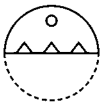
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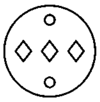
[SSC (10+2) 2012]

Answer Figures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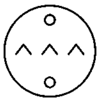
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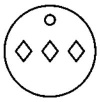
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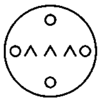
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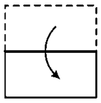
5. Question Figures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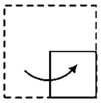
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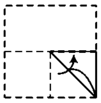
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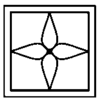
[SSC (Multitasking) 2013]

Answer Figures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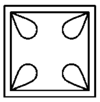
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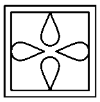
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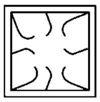
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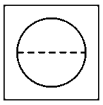
6. Question Figures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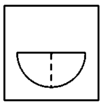
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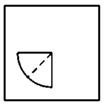
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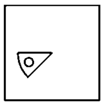
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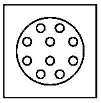
[SSC (DEO) 2012]

Answer Figures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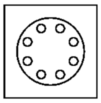
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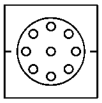
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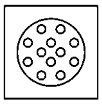
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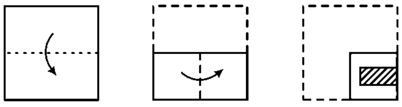
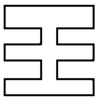
7. Question Figures



Answer Figures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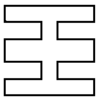
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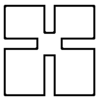
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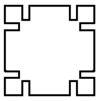
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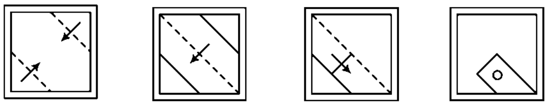
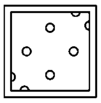
8. Question Figures



[SSC (CGL) 2013]

Answer Figures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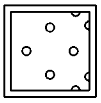
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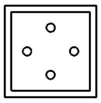
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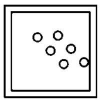
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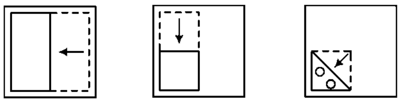
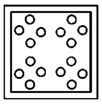
9. Question Figure



[SSC (FCI) 2012]

Answer Figures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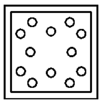
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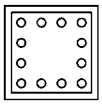
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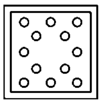
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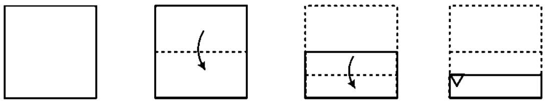
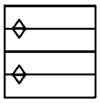
10. Question Figures



Answer Figures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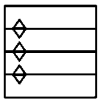
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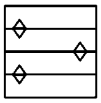
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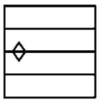
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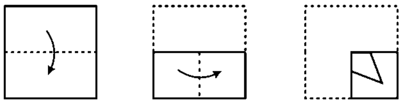
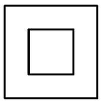
11. Question Figures



Answer Figures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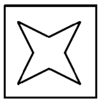
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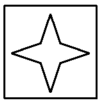
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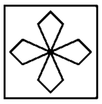
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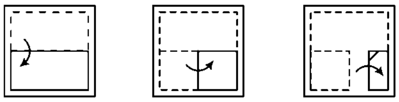
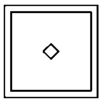
12. Question Figures



[SSC (FCI) 2012]

Answer Figures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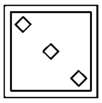
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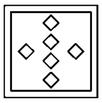
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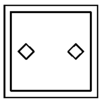
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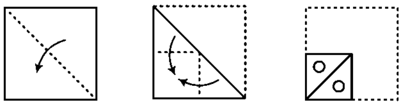
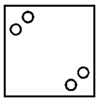
13. Question Figures



[SSC (CPO) 2009]

Answer Figures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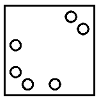
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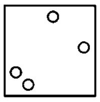
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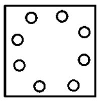
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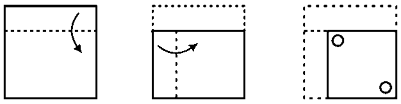
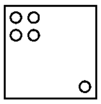
14. Question Figures



Answer Figures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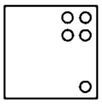
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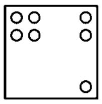
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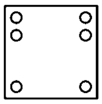
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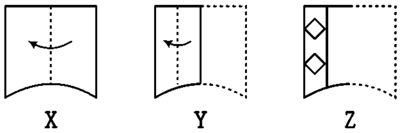
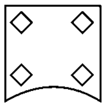
15. Question Figures



Answer Figures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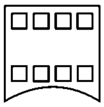
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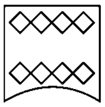
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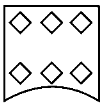
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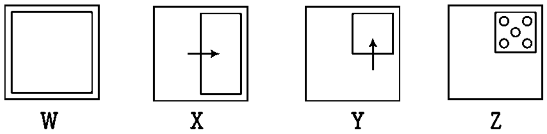
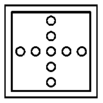
16. Question Figure



[SSC (10+2) 2012]

Answer Figures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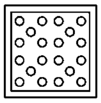
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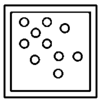
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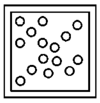
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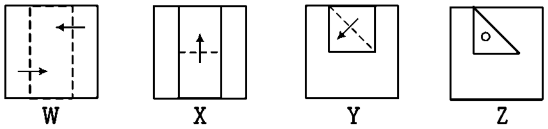
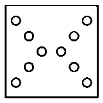
17. Question Figures



[SSC (CGL) 2013]

Answer Figures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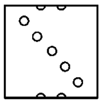
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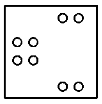
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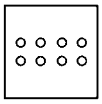
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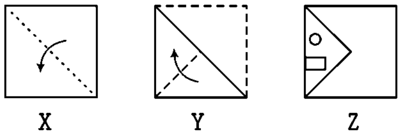
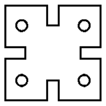
18. Question Figures



Answer Figures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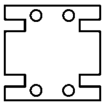
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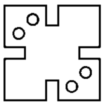
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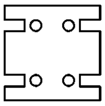
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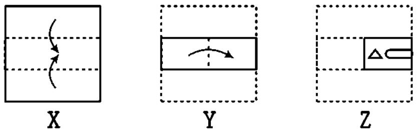
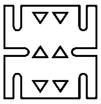
19. Question Figures



Answer Figures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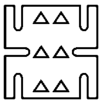
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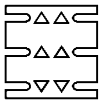
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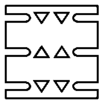
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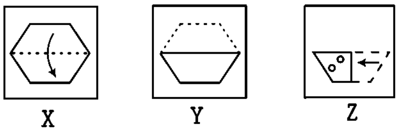
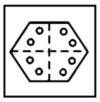
20. Question Figures



[SSC (10+2) 2013]

Answer Figures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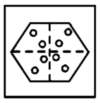
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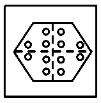
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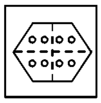
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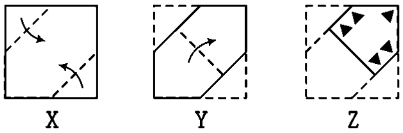
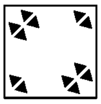
21. Question Figures



[SSC (CGL) 2011]

Answer Figures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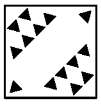
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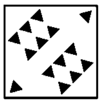
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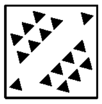
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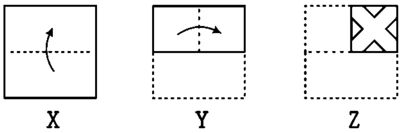
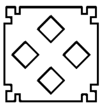
22. Question Figures



Answer Figures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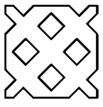
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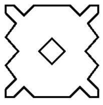
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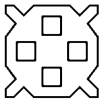
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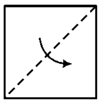
23. Question Figures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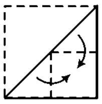
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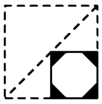
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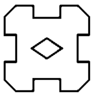
Answer Figures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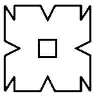
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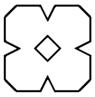
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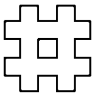
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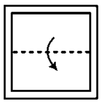
24. Question Figures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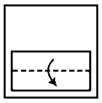
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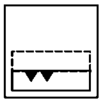
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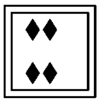
[SSC (FCI) 2012]

Answer Figures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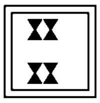
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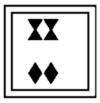
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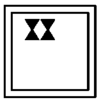
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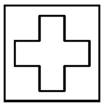
25. Question Figures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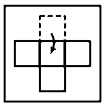
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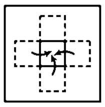
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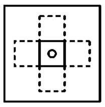
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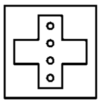
[SSC (FCI) 2012]

Answer Figures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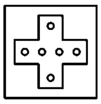
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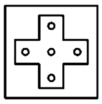
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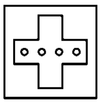
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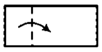
26. Question Figures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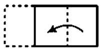
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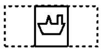
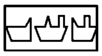

Z

Answer Figures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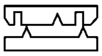
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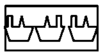
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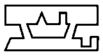
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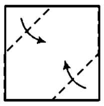
27. Question Figures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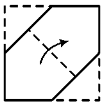
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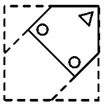
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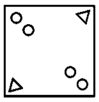
Answer Figures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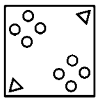
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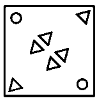
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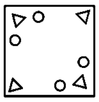
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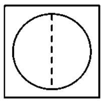
28. Question Figures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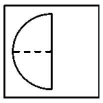
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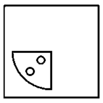
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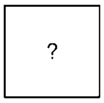
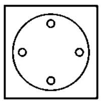


Z

[SSC (DEO) 2012]

Answer Figures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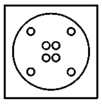
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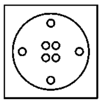
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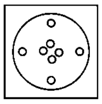
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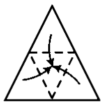
29. Question Figures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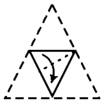
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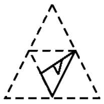
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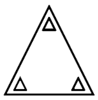
Answer Figures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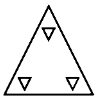
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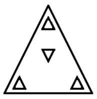
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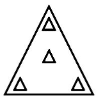
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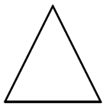
30. Question Figures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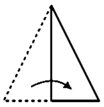
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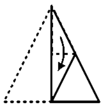
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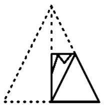
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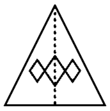
[UP B.Ed. 2010]

Answer Figures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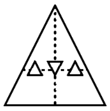
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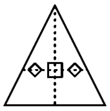
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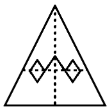
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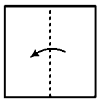
31. Question Figures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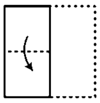
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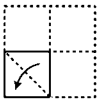
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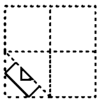
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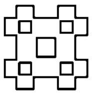
Answer Figures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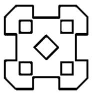
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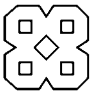
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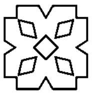
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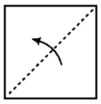
32. Question Figures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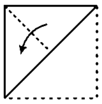
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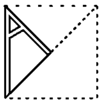
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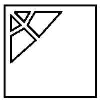
Answer Figures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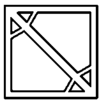
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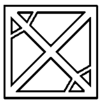
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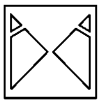
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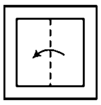
33. Question Figures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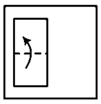
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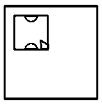
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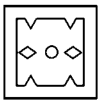
[SSC (CPO) 2013]

Answer Figures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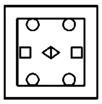
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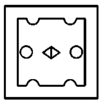
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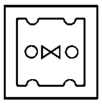
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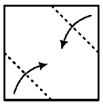
34. Question Figures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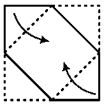
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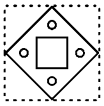
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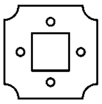
Answer Figures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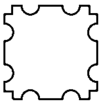
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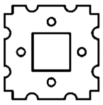
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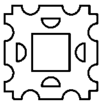
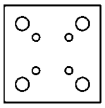

(d)

Directions (Q. Nos. 35-48)

In each of the following questions, a sheet of paper (square/circle/triangle) is folded and punch (cut) is made. When unfolded the paper sheet looks like the question figure. Analyse the answer figures and select the one that follows the manner in which the paper is folded and punch is made.

Question Figure **Answer Figures**

35.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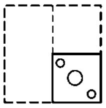
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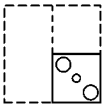
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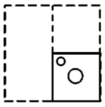
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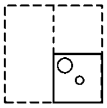
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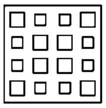
36.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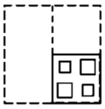
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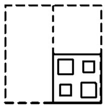
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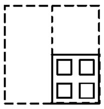
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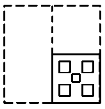
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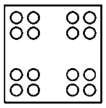
37.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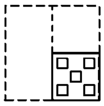
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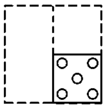
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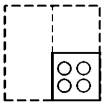
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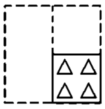
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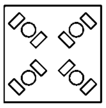
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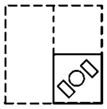
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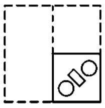
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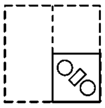
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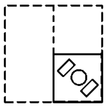
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Question Figure **Answer Figures**

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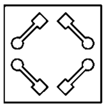
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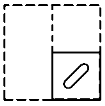
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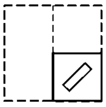
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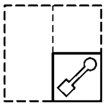
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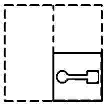
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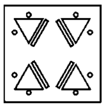
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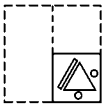
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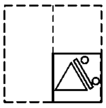
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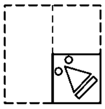
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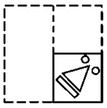
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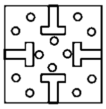
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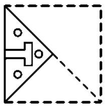
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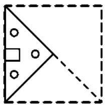
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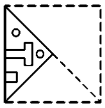
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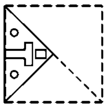
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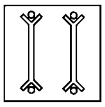
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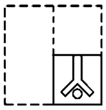
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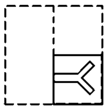
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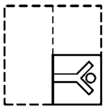
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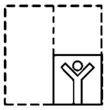
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Question Figure **Answer Figures**

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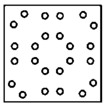
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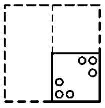
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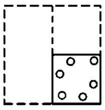
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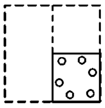
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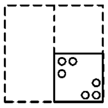
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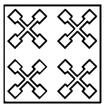
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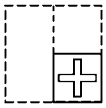
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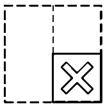
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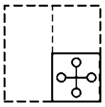
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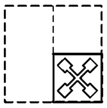
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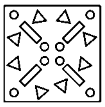
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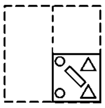
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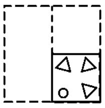
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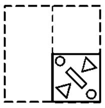
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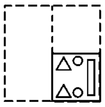
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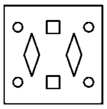
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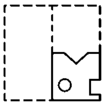
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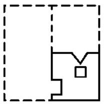
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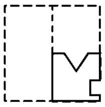
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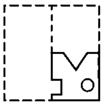
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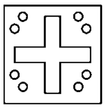
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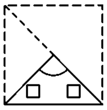
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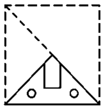
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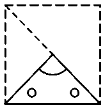
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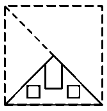
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Question Figure **Answer Figures**

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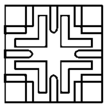
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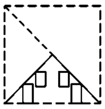
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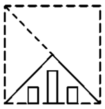
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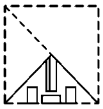
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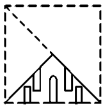
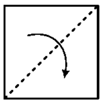

(d)

49. Suppose a square sheet of paper is folded and creased. Then, a single ship of the scissors removes a corner of the fold as shown in the last step below. If the pattern is then unfolded, which square will it now resemble?

Question Figures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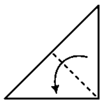
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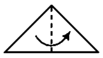
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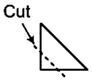
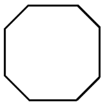


Z

Answer Figures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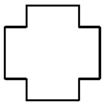
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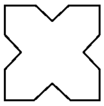
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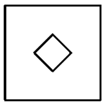

(d)

Response & Interpretations (Master Exercise)

1. (d)	**2.** (d)	**3.** (d)	**4.** (a)	**5.** (b)	**6.** (b)	**7.** (b)	**8.** (a)	**9.** (a)	**10.** (a)
11. (b)	**12.** (d)	**13.** (d)	**14.** (a)	**15.** (c)	**16.** (b)	**17.** (c)	**18.** (c)	**19.** (d)	**20.** (b)
21. (b)	**22.** (b)	**23.** (c)	**24.** (a)	**25.** (c)	**26.** (c)	**27.** (b)	**28.** (b)	**29.** (a)	**30.** (a)
31. (c)	**32.** (b)	**33.** (d)	**34.** (c)	**35.** (c)	**36.** (b)	**37.** (c)	**38.** (d)	**39.** (c)	**40.** (a)
41. (a)	**42.** (a)	**43.** (b)	**44.** (d)	**45.** (c)	**46.** (d)	**47.** (b)	**48.** (d)	**49.** (c)	

11

Formation of Figures

The process of formation of a defined geometrical figure with the use of pieces of different designs is known as formation of figure.

Different types of questions covered in this chapter are as follows

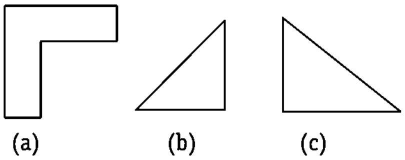
- Based on Arrangement of the Figures
- Based on Signs and Symbols
- Based on Formation of Triangle
- Square Formation Using a Set of Figures

This section of non-verbal reasoning deals with the problems related to the formation of geometrical figures like triangle, square, circle, etc., by joining some pieces out of a group of pieces of different designs. Besides this, some questions are asked in which the question figure contains some figures which can be joined together to obtain one of the alternative answer figures and one has to find out the correct alternative. Also, there are questions in which one question figure is given and we have to find out the correct answer figure in which all the pieces which are required to form the question figure are present.

In such questions, a question figure is given followed by four/five answer choices. The candidate is required to select the correct figure out of the given answer choice figures.

Let us consider an example to get a better idea about the formation of figures

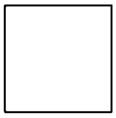
There are three blocks given as

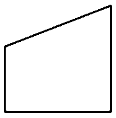


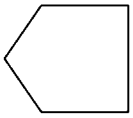
(a) (b) (c)

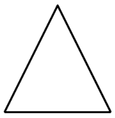
Now, if we are asked to form a figure, then there are many possibilities to join these blocks to form a figure. But, we have to analyse the options very carefully such that these three given blocks can be transformed into the figure given in one of the answer options.

If the given options are

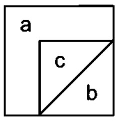

(a)


(b)


(c)


(d)

The above three blocks can be rearranged as



So, we have come to the conclusion that figure (a) can be formed from these blocks and hence is the correct answer.

Memory *Add-ons*

- In the questions based on figure formation, the number of elements given to form a figure must be equal to the elements present in the answer figure. This will help you to easily eliminate some of the option figures.
- The size of pieces of figures present in the question figure and the size of pieces used to form a figure may vary but their shapes must have to be similar.

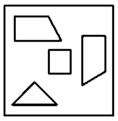
Various types of questions based on formation of figures are asked in different competitive exams. Based on their diverse nature, we have classified these into several types as follows

Type 1 Based on Arrangement of the Figures

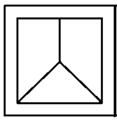
In this type of questions, a candidate is required to select a figure, out of the answer choice figures, that can be formed by arranging the pieces given in the question figure.

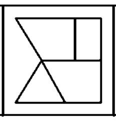
Directions (Example Nos. 1-4) In each of the following questions, find the figure out of the answer choice figures, that can be formed by joining the pieces given in the question figure.

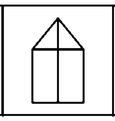
***Ex* 1** **Question Figure**

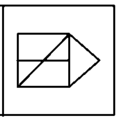


Answer Figures

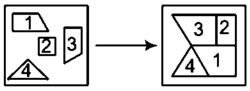

(a)


(b)

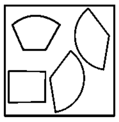

(c)


(d)

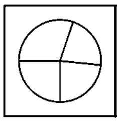
Sol. (*b*) Figure given in option (b) can be formed by joining the pieces given in the question figure as shown below

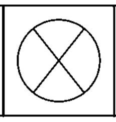


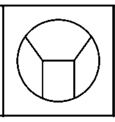
***Ex* 2** **Question Figure**

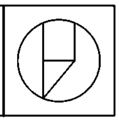


Answer Figures

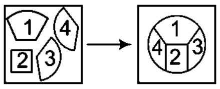

(a)


(b)

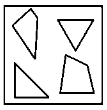

(c)

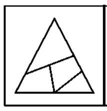

(d)

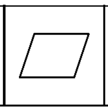
Sol. (c) Figure given in option (c) can be formed by joining the pieces given in the question figure as shown below

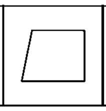


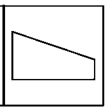
***Ex* 3** **Question Figure** **Answer Figures**







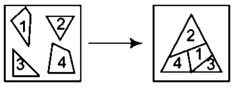




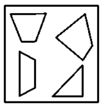
(a) (b) (c) (d)

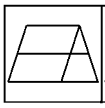
[SSC (Steno) 2011]

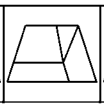
Sol. (*a*) Figure given in option (a) can be formed by joining the pieces given in the question figure as shown below

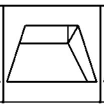


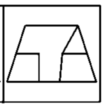
***Ex* 4** **Question Figure** **Answer Figures**







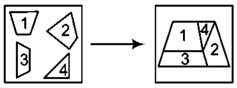




(a) (b) (c) (d)

[SSC (10+2) 2006]

Sol. (*b*) Figure given in option (b) can be formed by joining the pieces given in the question figure as shown below

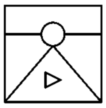


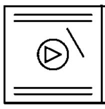
Type 2 Based on Signs and Symbols

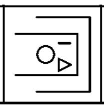
Such problems are just the reverse of type I. In this type of questions, question figures are to be formed with the pieces of one of the figures given in the answer choices and the candidate is required to find out the correct answer figure. Sometimes, pieces of boundary lines of the question figure are also given in the answer figure, then in this case these pieces are also counted for the formation of question figure. These questions require deep analysis of the question and answer figures.

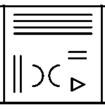
Directions (Example Nos. 5-6) In each of the following questions, find the figure given in the answer choices, that can form the question figure.

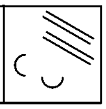
***Ex* 5** **Question Figure** **Answer Figures**





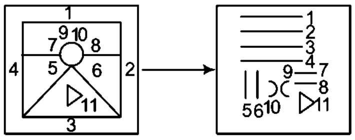




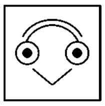


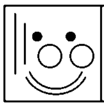
(a) (b) (c) (d)

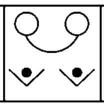
Sol. (*c*) Here, the question figure can be formed by joining the pieces given in option (c) as shown below

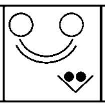


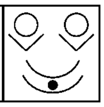
***Ex* 6** **Question Figure** **Answer Figures**







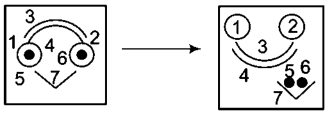




(a) (b) (c) (d)

[SSC (CGL) 2013]

Sol. (*c*) Here, the question figure can be formed by joining the pieces given in option (c) as shown below

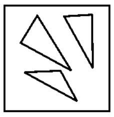


Practice Corner 11.1

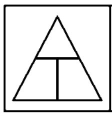
Build your Confidence...

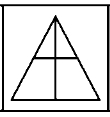
Directions (Q. Nos. 1-16) In each of the following questions, find the figure out of the answer choices figures, that can be formed by joining the pieces given in the question figure.

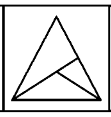
1. Question Figure

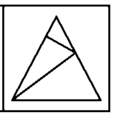


Answer Figures


(a)

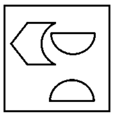

(b)

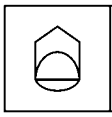

(c)

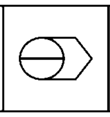

(d)

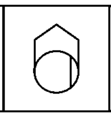
[SSC (CPO) 2008]

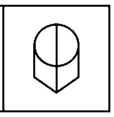
2.




(a)

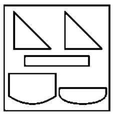

(b)

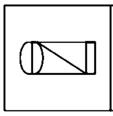

(c)

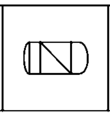

(d)

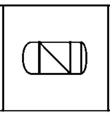
[SSC (CPO) 2008]

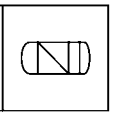
3.




(a)

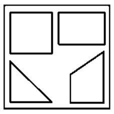

(b)

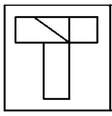

(c)

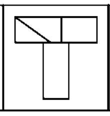

(d)

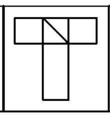
[SSC (DEO) 2008]

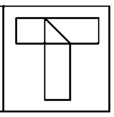
4.




(a)

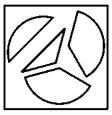

(b)

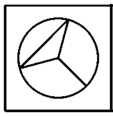

(c)

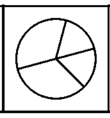

(d)

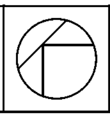
[SSC (CPO) 2009]

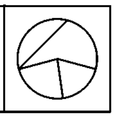
5.




(a)

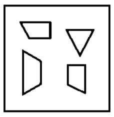

(b)

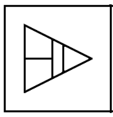

(c)


(d)

[SSC (Multitasking) 2006]

6.

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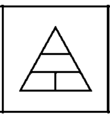
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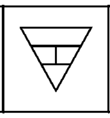
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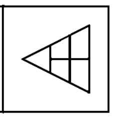
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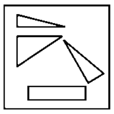
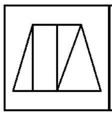
[SSC (CPO) 2006]

7.

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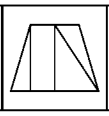
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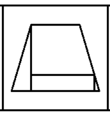
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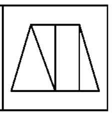
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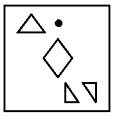
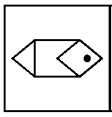
[SSC (CPO) 2008]

8. Question Figure



Answer Figures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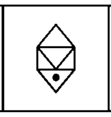
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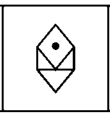
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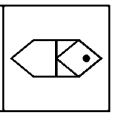
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[SSC (CPO) 2006]

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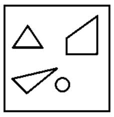

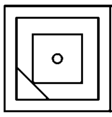
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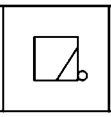
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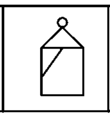
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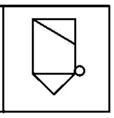
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[SSC (CPO) 2006]

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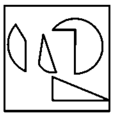

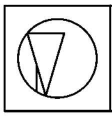
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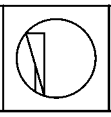
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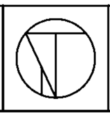
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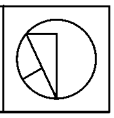
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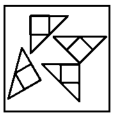
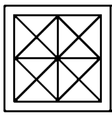
[UP B. Ed. 2007]

11.

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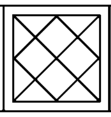
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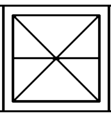
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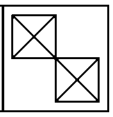
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[SSC (CPO) 2008, SSC (Multitasking) 2013]

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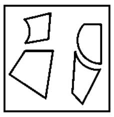

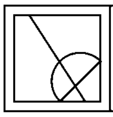
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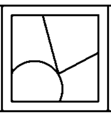
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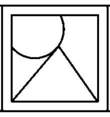
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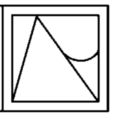
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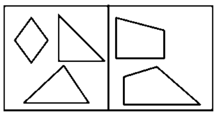
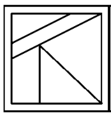
13. Question Figure



Answer Figures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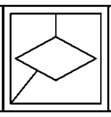
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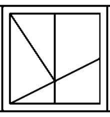
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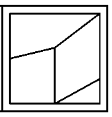
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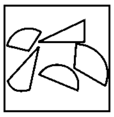
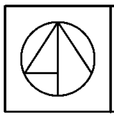
[SSC (CGL) April 2014]

14. Question Figure



Answer Figures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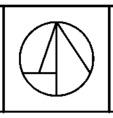
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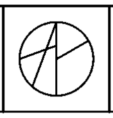
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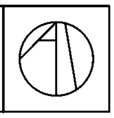
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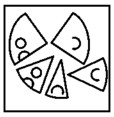
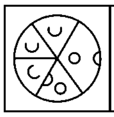
15.

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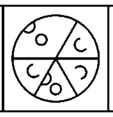
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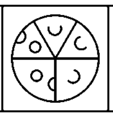
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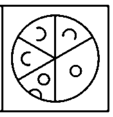
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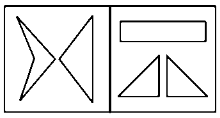
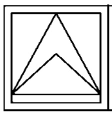
16. Question Figures



[SSC (DEO) 2009]

Answer Figures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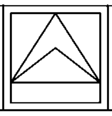
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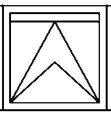
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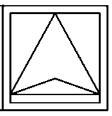
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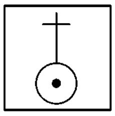
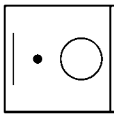
Directions (Q. Nos. 17-26) In each of the following questions, find the figure given in the answer choices, that can form the question figure

17. Question Figure



Answer Figures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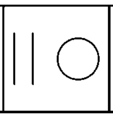
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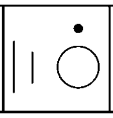
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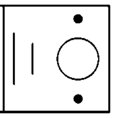
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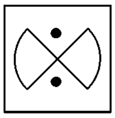
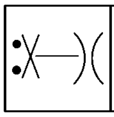
[SSC (CPO) 2008]

18.

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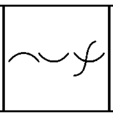
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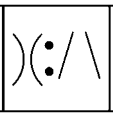
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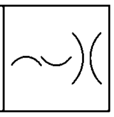
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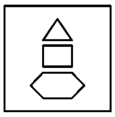
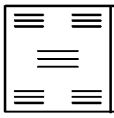
19.

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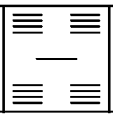
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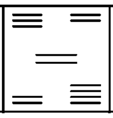
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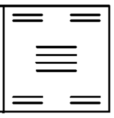
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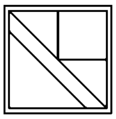
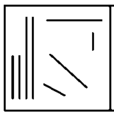
Question Figure **Answer Figures**

20.

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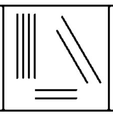
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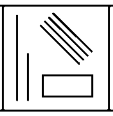
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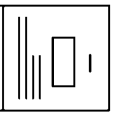
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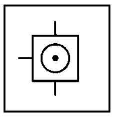
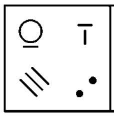
[SSC (Multitasking) 2006]

21.

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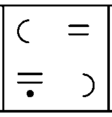
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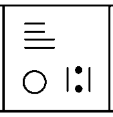
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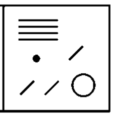
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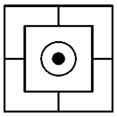
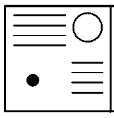
[SSC (10+2) 2006]

22. Question Figure



Answer Figures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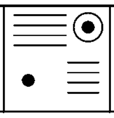
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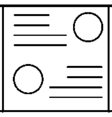
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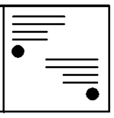
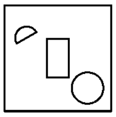
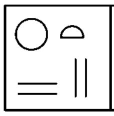
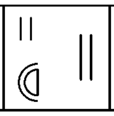

(d)

[SSC (CPO) 2006]

23.




(a)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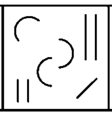
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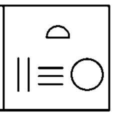
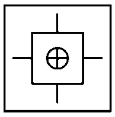
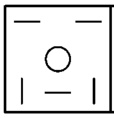
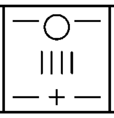

(d)

[MAT 2007]

24.




(a)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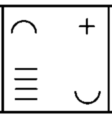
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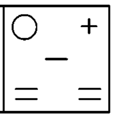
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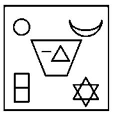
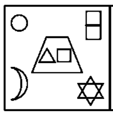
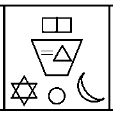
25.




(a)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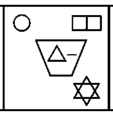
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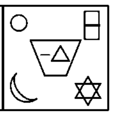
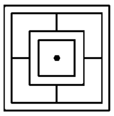
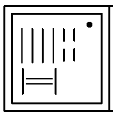
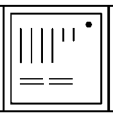

(d)

[CMAT 2013]

26.




(a)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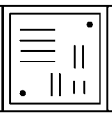
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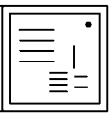

(d)

[SSC (CGL) 2013]

Response & Interpretations (11.1)

1. (c) **2.** (b) **3.** (d) **4.** (d) **5.** (a) **6.** (b) **7.** (b) **8.** (c) **9.** (d) **10.** (b)
11. (b) **12.** (b) **13.** (d) **14.** (b) **15.** (c) **16.** (b) **17** (c) **18.** (c) **19.** (c) **20.** (b)
21. (d) **22.** (a) **23.** (c) **24.** (b) **25.** (d) **26.** (a)

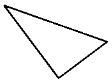
Type 3 Based on Formation of Triangle

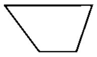
In this type of questions, a triangle (equilateral, isosceles etc.) is to be formed by joining three figures out of a group of figures of different designs. A candidate is required to find out the correct combination of figures from the given alternative combinations.

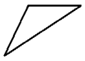
To solve these type of questions, there is no fixed rule or method. These questions requires a deep analysis of various element (designs) present to form a figure and spatial analysis of the figure to be formed.

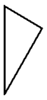
Directions (Example Nos. 7 - 9) In each of the following questions, five figures are given. Out of them, find the three figures that can be joined to form an equilateral triangle.

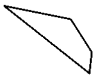
***Ex* 7**


(A)


(B)

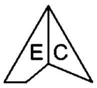

(C)


(D)

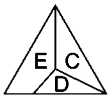

(E)

(a) ABC (b) BCD (c) CDE (d) BDE

Sol. (c) An equilateral triangle has each angle measure equal to 60° and the lengths of all its three sides are also equal. Now, we cannot measure the exact value of angle and sides but we have to closely approximate these measures and values. So, keeping these points in mind, we first combine figure E and C which will look like as

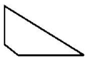


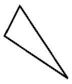
Now, the missing figure which can fit in the above figure is figure D. So, the complete figure is shown as



So, the correct pair of figures is C, D and E.

***Ex* 8**


(A)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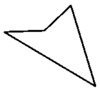
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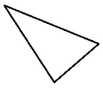
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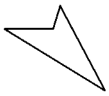
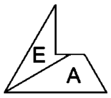
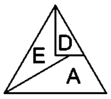

(E)

(a) ABE (b) BCE (c) ADE (d) BDE

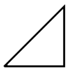
Sol. (c) As done in above example, we have to closely approximate the different measures. So, first we combine the figures (E) and (A) which will look like as

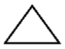


Now, the missing figure which will complete the above figure is figure (D). The complete figure will be as



***Ex* 9**


(A)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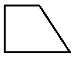
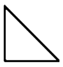

(C)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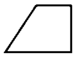
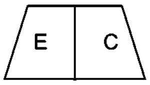

(E)

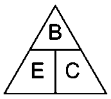
(a) BCD (b) ABC (c) CDE (d) BCE

Sol. (*d*) Visualise two figures which on combining will give a part of an equilateral triangle. These figures are figure E and C which on combining will look like as shown below



Now, the remaining figure which when combined with the above figure will give an equilateral triangle is figure B.

So, the complete figure will look like as

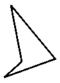


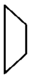
Type 4 Square Formation Using a Set of Figures

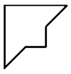
In this type of questions, a square is to be formed by joining three figures out of a group of figures of different designs. A candidate is required to find out the correct combination of figures from the given sets of figures.

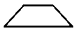
Directions (Example Nos. 10-11) In each of the following questions, a set of five figures marked (A), (B), (C), (D) and (E) are given followed by four alternatives (a), (b), (c) and (d). Select the alternative which contains those figures which, if fitted together, will form a complete square.

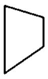
Ex 10


(A)


(B)

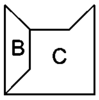

(C)


(D)


(E)

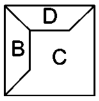
(a) ACD (b) CDE (c) BCD (d) ACE

Sol. (c) The only figure with right angle is figure (C). If it is fitted with figure (B), the resultant figure will look like the below figure (X)



(X)

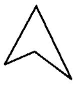
Now, when the figure (D) is fitted in figure (X), the resultant figure will be a square as shown in figure (Y)

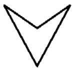


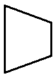
(Y)

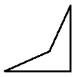
Hence, combination of figures as presented by alternative (c) is the correct combination of figures to form a square.

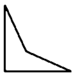
Ex 11


(A)


(B)

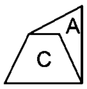

(C)


(D)


(E)

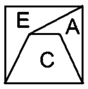
(a) ABD (b) CDE (c) ABC (d) ACE

Sol. (*d*) If the figures (C) and (A) are fitted together, the resultant figure will look like the below figure (X).



(X)

Now, if the figure (E) is fitted in figure (X), the resultant figure will be a square as shown in figure (Y).



(Y)

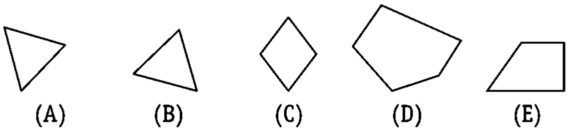
Hence, combination of figures as presented by alternative (d) is the correct combination of figures to form a square.

Practice Corner **11.2**

Build your Confidence...

Directions (Q. Nos. 1-8) In each of the following questions, five figures are given. Out of them, find the three figures that can be joined to form an equilateral triangle.

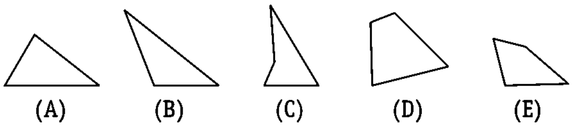
1.



[SSC (10+2) 2009]

(a) BCD
(b) ABC
(c) CDE
(d) BCE

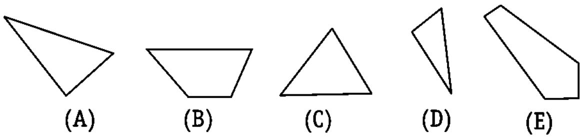
2.



[MAT 2007]

(a) BCD
(b) ACD
(c) CDE
(d) BDE

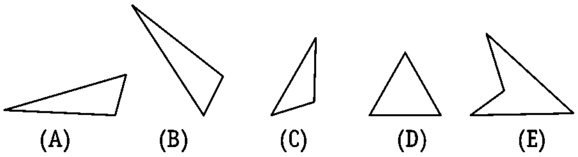
3.



[SSC (10+2) 2006]

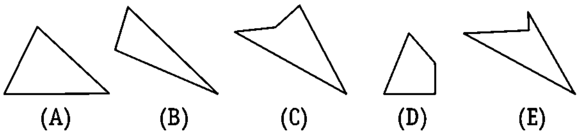
(a) ABC
(b) BCD
(c) CDE
(d) BDE

4.



(a) ABC
(b) ACE
(c) BDE
(d) CDE

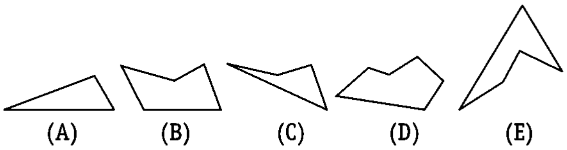
5.



[UP B. Ed. 2006]

(a) ABE
(b) BCE
(c) ADE
(d) BDE

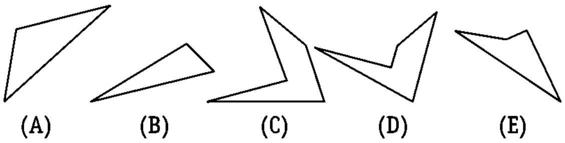
6.



[MAT 2006]

(a) ACE
(b) ABD
(c) BDE
(d) CDE

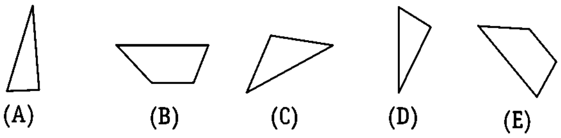
7.



[UP B. Ed. 2006]

(a) ABC
(b) ACE
(c) BCD
(d) BDE

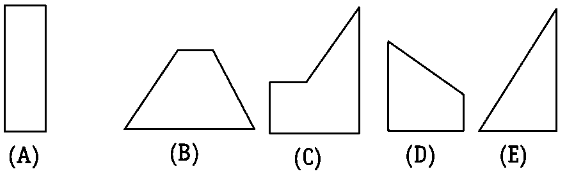
8.



(a) ABC
(b) BED
(c) CDE
(d) ADE

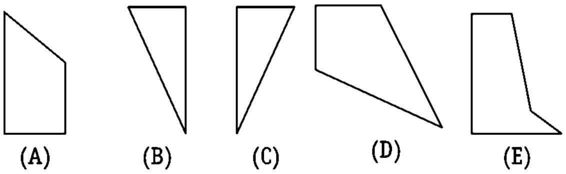
Directions (Q. Nos. 9-16) In each of the following questions, five figures are given. Out of them, find the three figures that can be joined to form a squre.

9.



(a) ABD
(b) ACD
(c) BDE
(d) CDE

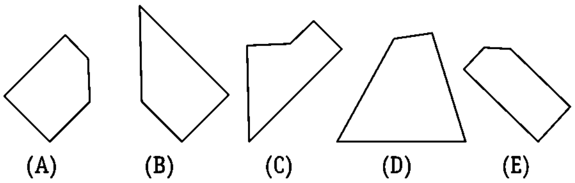
10.



[UP Police (Constable) 2006]

(a) ABD
(b) BCD
(c) BDE
(d) CDE

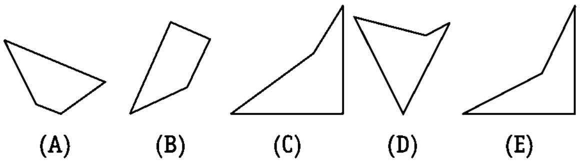
11.



[SSC (10+2) 2006]

(a) ABC
(b) BCD
(c) BDE
(d) CDE

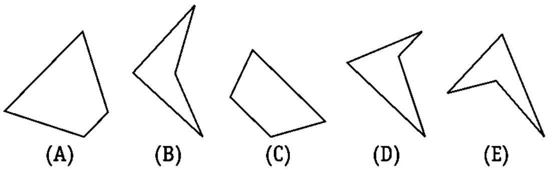
12.



[SSC (10+2) 2009]

(a) ACD
(b) BCD
(c) BDE
(d) CDE

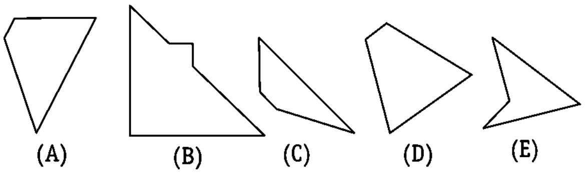
13.



[MAT 2007]

(a) ABD
(b) BCD
(c) BDE
(d) CDE

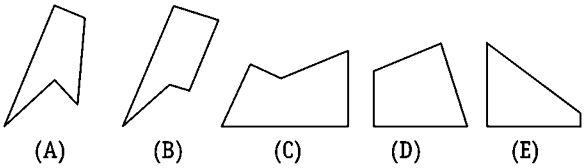
14.



[SSC (CPO)2008]

(a) ABC
(b) BCD
(c) BDE
(d) CDE

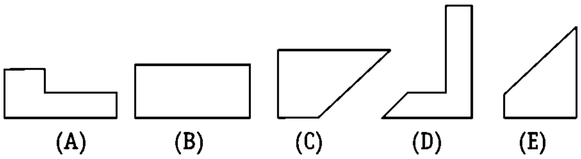
15.



[UP Police (Constable) 2001]

(a) ABD
(b) ACD
(c) BDE
(d) BCE

16.



(a) ABD
(b) BCD
(c) ACE
(d) CDE

Response & Interpretations **(11.2)**

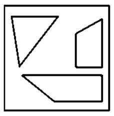
1. (b) **2.** (c) **3.** (c) **4.** (b) **5.** (c) **6.** (a) **7.** (d) **8.** (d) **9.** (b) **10.** (b)
11. (a) **12.** (a) **13.** (a) **14.** (a) **15.** (b) **16.** (c)

Master Exercise

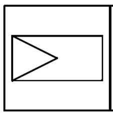
Take a Leap...

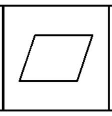
Directions (Q. Nos. 1-13) In each of the following questions, find the figure out of the answer choice figures, that can be formed by joining the pieces given in the question figure.

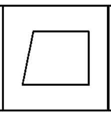
1. Question Figure

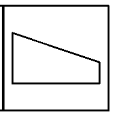

(X)

Answer Figures


(a)

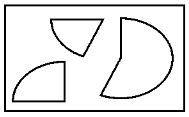

(b)


(c)

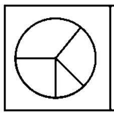

(d)

[SSC (10+2, DEO, LDC) 2010]

2. Question Figure


(X)

Answer Figures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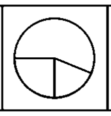
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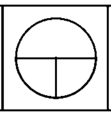
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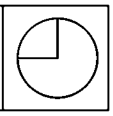
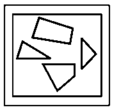

(d)

3.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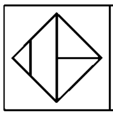
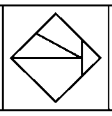
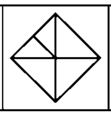

(a)


(b)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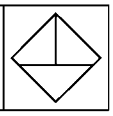
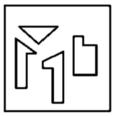
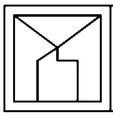
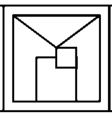

(d)

[SSC (CGL) 2013]

4.


(X)


(a)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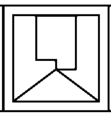
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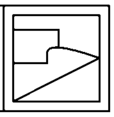
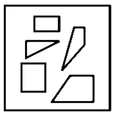

(d)

[SSC (10+2) 2006]

5.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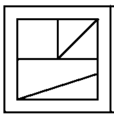
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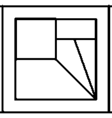
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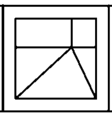
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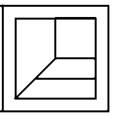
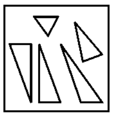
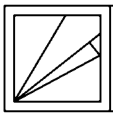

(d)

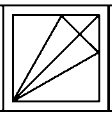
[SSC (10+2) 2008]

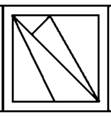
6. Question Figure


(X)

Answer Figures


(a)


(b)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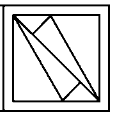
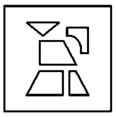

(d)

[UP B. Ed. 2007]

7.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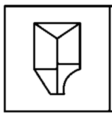
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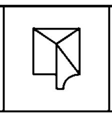
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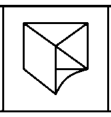
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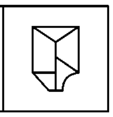
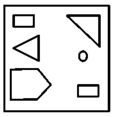

(d)

[SSC (10+2) 2006]

8.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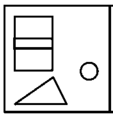
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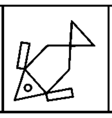
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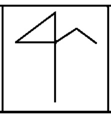
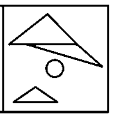
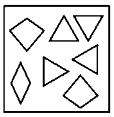
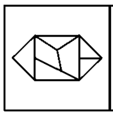

(c)


(d)

[SSC (CGL) 2013]

9.


(X)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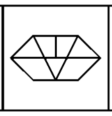
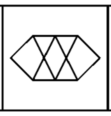

(b)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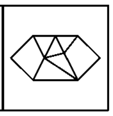
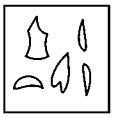

(d)

[SSC (10+2) 2006]

10.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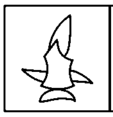
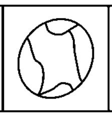
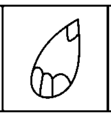
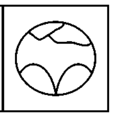

(a)

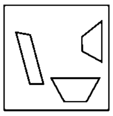

(b)

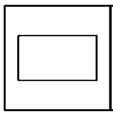

(c)

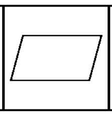

(d)

[SSC (LDC) 2008]

11.


(X)


(a)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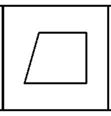
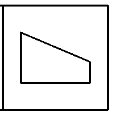
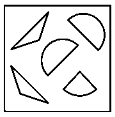
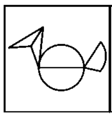

(c)

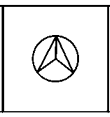

(d)

[SSC (10+2, DEO, LDC) 2010]

12. Question Figure **Answer Figures**


(X)


(a)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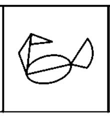
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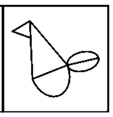
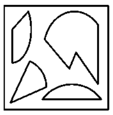

(d)

[SSC (Steno) 2011]

13. Question Figure **Answer Figures**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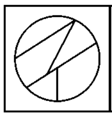
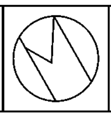
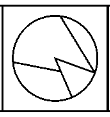

(a)


(b)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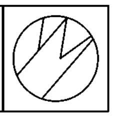
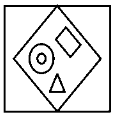

(d)

[SSC (CGL) 2010]

Directions (Q. Nos. 14-15) In each of the following questions , among the four answer figures, find the figure that can form the figure given in the question figure.

14. Question Figure **Answer Figures**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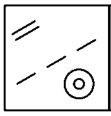
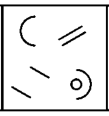
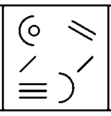
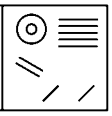
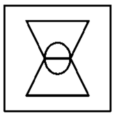

(a)

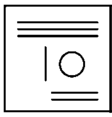

(b)

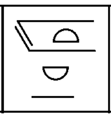

(c)

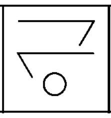

(d)

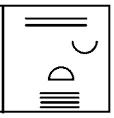
15. Question Figure **Answer Figures**


(X)


(a)

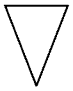

(b)

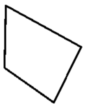

(c)

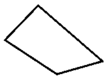

(d)

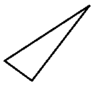
Directions (Q. Nos. 16-18) In each of the following questions, select that combination of figures which can fit into one another to form an equilateral triangle.

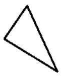
16.


(A)


(B)

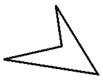

(C)

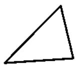

(D)

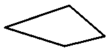

(E)

(a) BCD (b) ABD (c) CDE (d) ABE

17.


(A)


(B)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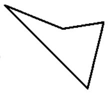
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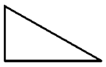
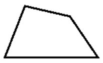
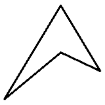

(E)

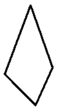
[SSC (CGL) 2006]

(a) ABD (b) BCD (c) BDE (d) CDE

18.


(A)


(B)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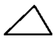
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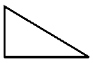
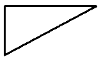

(E)

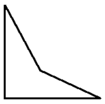
[UP B. Ed. 2009]

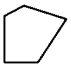
(a) ABC (b) BCD (c) ABD (d) ABE

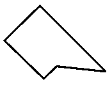
Directions (Q. Nos. 19-23) In each of the following questions, select the alternative which represents the combination of figures which, if fitted together, will form a complete square.

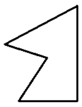
19.


(A)


(B)

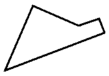

(C)

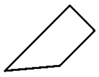

(D)

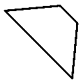

(E)

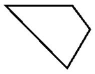
(a) ABD (b) BCD (c) BDE (d) ACE

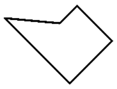
20.


(A)


(B)


(C)

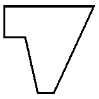

(D)

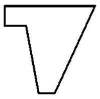

(E)

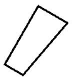
[SSC (DEO) 2005]

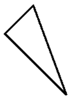
(a) ABD (b) BCE (c) BDE (d) ACE

21.


(A)


(B)


(C)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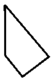
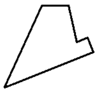
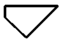

(E)

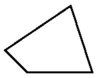
[RRB (ASM) 2005]

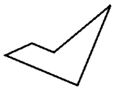
(a) ABD (b) BCD (c) BDE (d) CDE

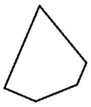
22.


(A)


(B)

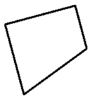

(C)

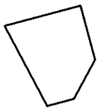

(D)

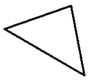

(E)

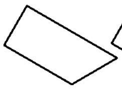
(a) ABD (b) BCD (c) BDE (d) CDE

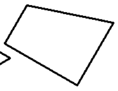
23.


(A)


(B)

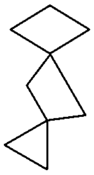

(C)

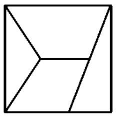

(D)

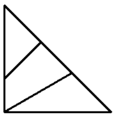

(E)

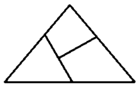
(a) ABCE (b) BDCE (c) EABC (d) CBAD

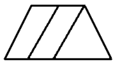
24. A group of interconnected pieces is given. Suppose you were able to rotate the pieces, so that neighbouring sides aligned flatly, then find the answer figure out of the answer choice figures that can be formed by joining the pieces given in the question figure.



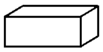

(a)

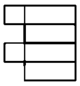

(b)

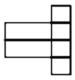

(c)

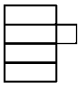

(d)

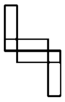
25. Which of the following figures (a), (b), (c) and (d), when folded along the lines, will produce the given figure (X)?


(X)

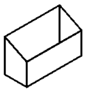

(a)

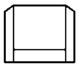

(b)

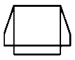

(c)

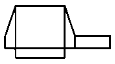

(d)

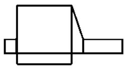
26. Which of the following figures (a), (b), (c) and (d), when folded along the lines, will produce the given figure (X)?


(X)

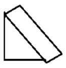

(a)

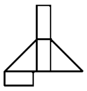

(b)

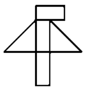

(c)

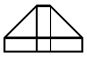

(d)

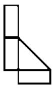
27. Which of the following figures (a), (b), (c) and (d), when folded along the lines, will produce the given figure (X)?


(X)

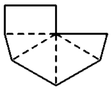

(a)

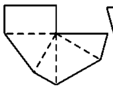

(b)

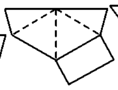

(c)

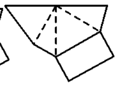

(d)

28. Which of the following figures shown below, when folded along the dotted lines, will form a pyramid shaped box with a rectangular base?


(a)


(b)


(c)


(d)

Response & Interpretations (Master Exercise)

1. (a)	**2.** (b)	**3.** (b)	**4.** (c)	**5.** (b)	**6.** (c)	**7.** (a)	**8.** (b)	**9.** (c)	**10.** (a)
11. (b)	**12.** (b)	**13.** (c)	**14.** (c)	**15.** (d)	**16.** (d)	**17.** (b)	**18.** (b)	**19.** (d)	**20.** (d)
21. (b)	**22.** (c)	**23.** (b)	**24.** (c)	**25.** (d)	**26.** (c)	**27.** (a)	**28.** (d)		

12

Mirror Image

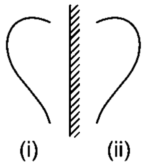
Mirror Image is the image or the reflection of an object into a mirror when that object is placed near it.

Different types of questions covered in this chapter are as follows

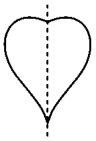
- Based on Vertical Mirror
- Based on Horizontal Mirror
- Mirror Image of Letters and Numbers
- Mirror Image of Clocks

In case of standard form of mirror image *i.e.,* when the mirror is placed vertically, the object gets laterally inverted. In other words, the **Left Hand Side** (LHS) and **Right Hand Side** (RHS) of an object interchange their places while top and bottom remain the same.

Let us see an example to get a better idea about the concept of mirror images



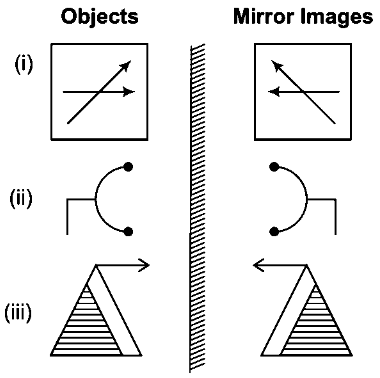
Here, Fig. (ii) is the mirror image of Fig. (i). On combining these two figures

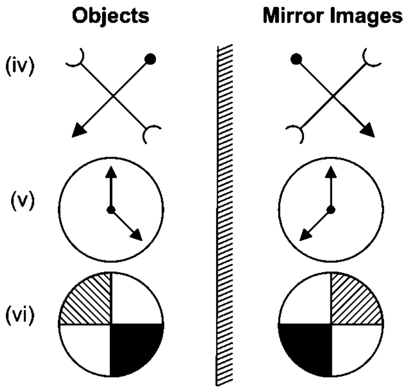


We get a 'heart' shaped figure which is symmetrical along an imaginary line which is used in place of the mirror.

Objects having Different Mirror Images

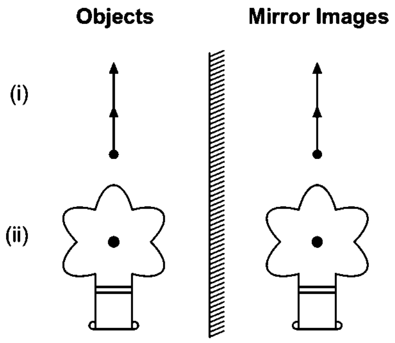
Mostly the mirror image of a figure is different from the original figure which is because of the dissimilarity in the left and right halves of the figure. This can be better understood with the help of the below examples

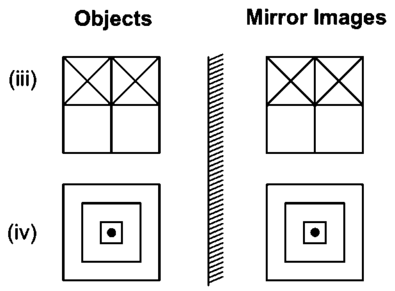

Objects
Mirror Images
(i)
(ii)
(iii)


Objects
Mirror Images
(iv)
(v)
(vi)

Objects having Identical Mirror Images

Sometimes it happens that mirror image formed is identical to the original figure. This is the case when LHS and RHS halves of the figure are similar to each other but in opposite directions. This can be better understood with the help of the below examples.


Objects
Mirror Images
(i)
(ii)

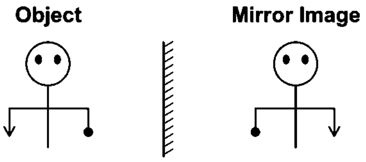

Objects
Mirror Images
(iii)
(iv)

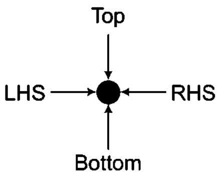
In the above discussion, the concept has been given about standard form of mirror image in which **vertical mirror** is used.

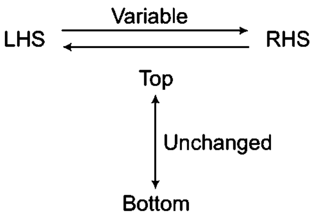
Now, we will discuss different types of questions based on placing of mirror on which questions are asked in various exams

Type 1 Based on Vertical Mirror

In such questions a vertical mirror is placed to the left or right of the object and standard form of mirror image is formed, where the Left Hand Side (LHS) and Right Hand Side (RHS) of the object interchange their places while top and bottom remain unchanged.

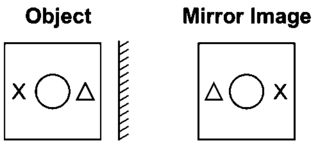

Object
Mirror Image


Top
LHS
RHS
Bottom

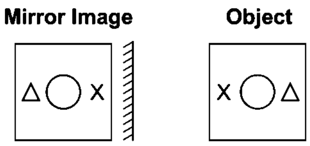

Variable
LHS
RHS
Top
Unchanged
Bottom

To get standard form of mirror image, the mirror is placed vertically to the left or right of the object and in both the cases, the image obtained is same.

Case I When the mirror is placed vertically to the right of the object



Case II When the mirror is placed vertically to the left of the object



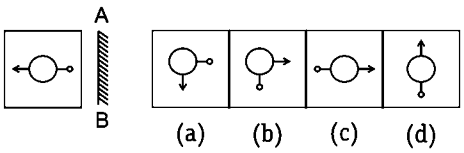
Memory *Add-ons*

For finding mirror image of an object/figure, try to overlap the figure given in the options, along the mirror as the axis, then the option figure which exactly overlaps the original figure is the correct answer.

Your will get a better idea from the following examples about the various types of questions asked

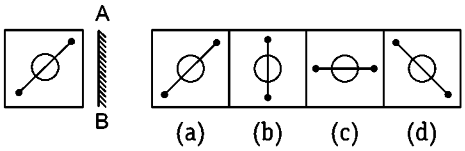
Directions (Example Nos. 1-6) In each of the following questions, choose the correct mirror image of the figure given from amongst the four alternatives (a), (b), (c) and (d), when mirror is placed on the line AB.

***Ex* 1** **Question Figure** **Answer Figures**



Sol. (*c*) Here, the mirror is placed vertically at AB on the RHS of the question figure. Hence, only the figure given in answer figure (c) would be obtained as the correct mirror image.

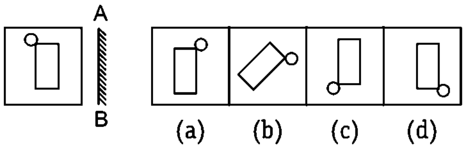
***Ex* 2** **Question Figure** **Answer Figures**



[SSC (CPO) 2009]

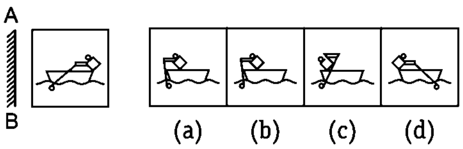
Sol. (*d*) Here, the mirror is placed vertically at AB on the RHS of the question figure. Hence, only the figure given in answer figure (d) would be obtained as the correct mirror image.

***Ex* 3** **Question Figure** **Answer Figures**



Sol. (*a*) Here, the mirror is placed vertically at AB on the RHS of the question figure. Hence, only the figure given in answer figure (a) would be obtained as the correct mirror image.

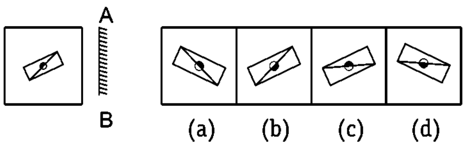
***Ex* 4** **Question Figure** **Answer Figures**



[SSC (10 + 2) 2010]

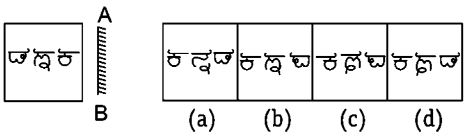
Sol. (*d*) Here, the mirror is placed vertically at AB on the LHS of the question figure. Hence, only the figure given in answer figure (d) would be obtained as the correct mirror image.

***Ex* 5** **Question Figure** **Answer Figures**



Sol. (*a*) Here, the mirror is placed vertically at AB on the RHS of the question figure. Hence, only the figure given in answer figure (a) would be obtained as the correct mirror image.

***Ex* 6** **Question Figure** **Answer Figures**



Sol. (*c*) Here, the mirror is placed vertically on the RHS of the question figure. Hence, only answer figure (c) would be obtained as the correct mirror image.

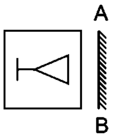
Practice Corner **12.1**

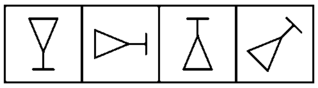
Build your Confidence...

Directions (Q. Nos. 1-31) In each of the following questions, choose the correct mirror image from the alternatives (a), (b), (c) and (d), when mirror is placed on the line AB.

Question Figure **Answer Figures**

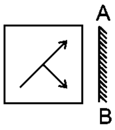
1.

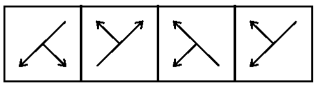




(a) (b) (c) (d)

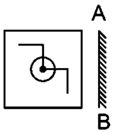
2.

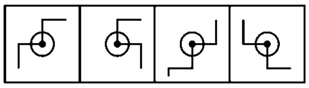




(a) (b) (c) (d) **[UP B. Ed. 2009]**

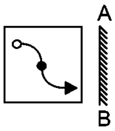
3.

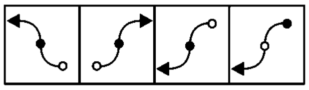




(a) (b) (c) (d) **[UP B. Ed. 2009]**

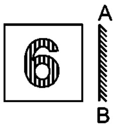
4.

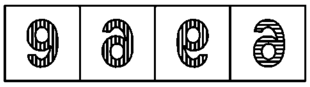




(a) (b) (c) (d) **[UP B. Ed. 2009]**

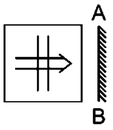
5.

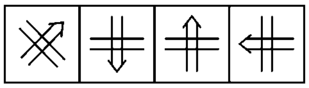




(a) (b) (c) (d) **[SSC (CPO) 2008]**

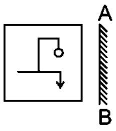
6.

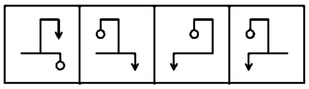




(a) (b) (c) (d)

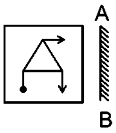
7.

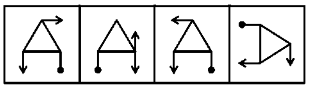




(a) (b) (c) (d)

8.

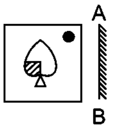


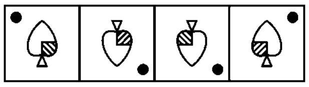


(a) (b) (c) (d)

Question Figure **Answer Figures**

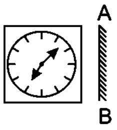
9.

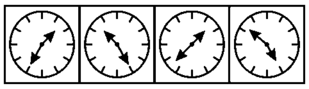




(a) (b) (c) (d)

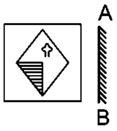
10.

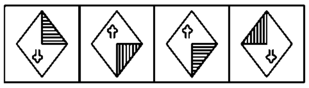




(a) (b) (c) (d)

11.

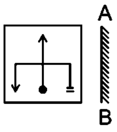


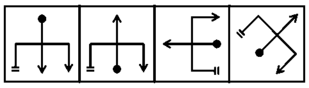


(a) (b) (c) (d)

[SSC (Multitasking) 2014]

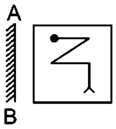
12.

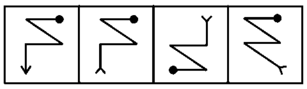




(a) (b) (c) (d)

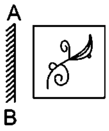
13.

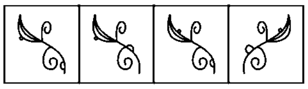




(a) (b) (c) (d) **[UP B. Ed. 2011]**

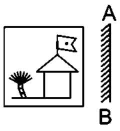
14.

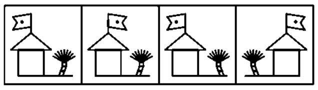




(a) (b) (c) (d)

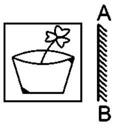
15.

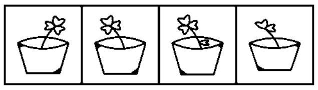




(a) (b) (c) (d)

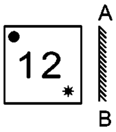
16.

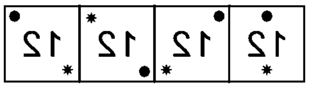


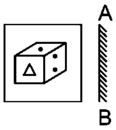


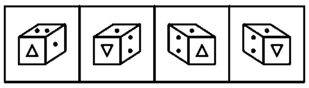
(a) (b) (c) (d) **[UP B. Ed. 2011]**

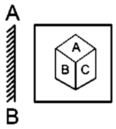
Question Figure **Answer Figures**

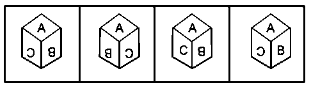
17.


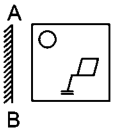

(a) (b) (c) (d) [UP B. Ed. 2011]

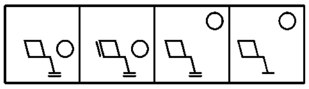
18.


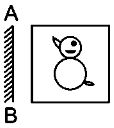

(a) (b) (c) (d)
[SSC (CPO) 2013, SSC (10+2), DEO, LDC 2010]

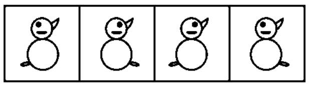
19.


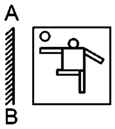

(a) (b) (c) (d) [SSC (CGL) 2013]

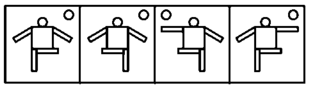
20.


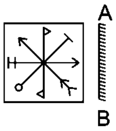

(a) (b) (c) (d)

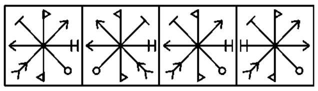
21.



(a) (b) (c) (d) [SSC (CGL) 2013]

22.



(a) (b) (c) (d)

23.



(a) (b) (c) (d)

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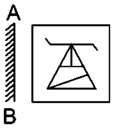
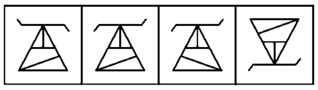
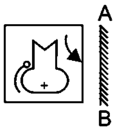
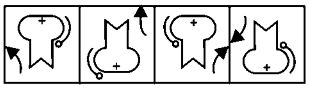
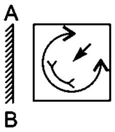


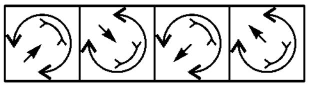

(a) (b) (c) (d)
[SSC (Steno) 2011]

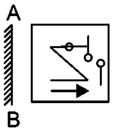
Question Figure **Answer Figures**

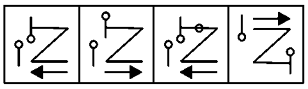
25.


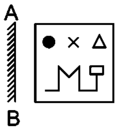

(a) (b) (c) (d)

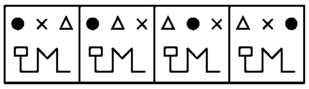
26.


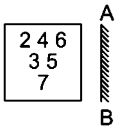

(a) (b) (c) (d)

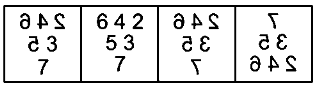
27.


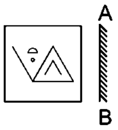

(a) (b) (c) (d)

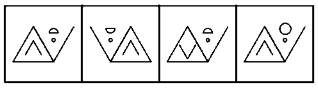
28.


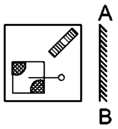

(a) (b) (c) (d)

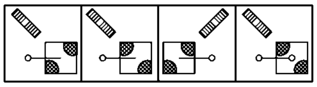
29.



(a) (b) (c) (d)
[SSC (CGL) 2013]

30.



(a) (b) (c) (d)
[SSC (Multitasking) 2012]

31.



(a) (b) (c) (d)
[SSC (CGL) 2013]

Response & Interpretations (12.1)

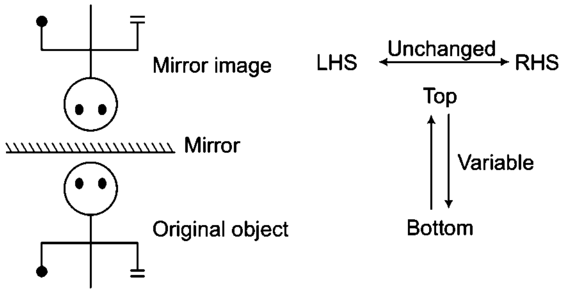
1. (b) **2.** (c) **3.** (a) **4.** (c) **5.** (b) **6.** (d) **7.** (d) **8.** (c) **9.** (a) **10.** (d)
11. (c) **12.** (b) **13.** (b) **14.** (b) **15.** (a) **16.** (b) **17.** (c) **18.** (c) **19.** (a) **20.** (c)
21. (a) **22.** (d) **23.** (c) **24.** (c) **25.** (d) **26.** (b) **27.** (c) **28.** (d) **29.** (c) **30.** (a)
31. (a)

Type 2 Based on Horizontal Mirror

In such questions a horizontal mirror is placed at the top or bottom of the object and the image, so obtained is like the water image. In this type of question, LHS and RHS remain unchanged.

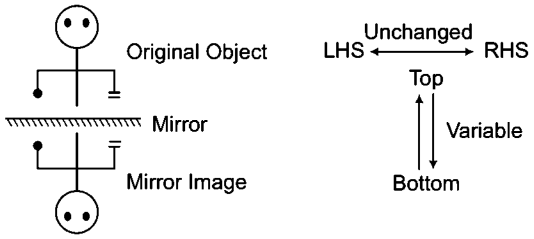
Let us see the two cases given below

Case I **When mirror is placed horizontally at the top of the object**



Case II **When mirror is placed horizontally at the bottom of the object**

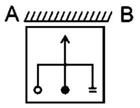
In this case also, the mirror image of an object is as same as its water image.

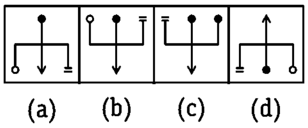


The following examples will give you a better idea about such type of questions

Directions (Example Nos. 7-9) In each of the following questions, choose the correct mirror image from the alternatives (a), (b), (c) and (d) when mirror is placed along the line AB.

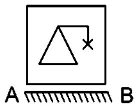
Ex **7** **Question Figure** **Answer Figures**

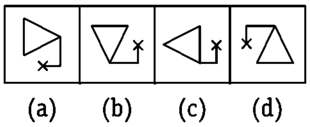




Sol. (*b*) Here, the mirror is placed horizontally at AB on the top of the question figure. Hence, only answer figure (b) is the vertically inverted form of question figure in which top and bottom interchange places while LHS and RHS remain the same.

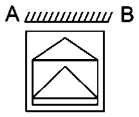
Ex **8** **Question Figure** **Answer Figures**

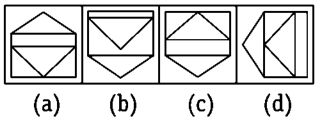




Sol. (*b*) Here, the mirror is placed horizontally at AB *i.e.*, at the bottom of the question figure. Hence, only answer figure (b) looks like the water image of the question figure. It means, option (b) is the vertically inverted form of question figure in which top and bottom interchange places while LHS and RHS remain the same.

Ex **9** **Question Figure** **Answer Figures**





[SSC (LDC & DEO) 2009]

Sol. (*b*) Here, the mirror is placed horizontally at AB on the top of the question figure. Only answer figure (b) is the vertically inverted form of question figure in which top and bottom interchange places while LHS and RHS remain the same.

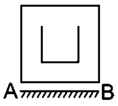
Practice Corner **12.2**

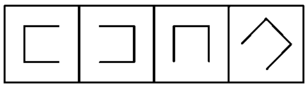
Build your Confidence...

Directions (Q. Nos. 1-14) In each of the following questions, choose the correct mirror image from the answer figures (a), (b), (c) and (d).

Question Figure **Answer Figures**

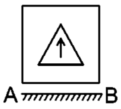
1.

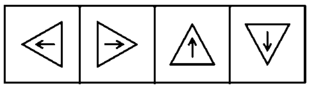




(a) (b) (c) (d)

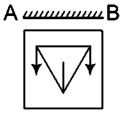
2.

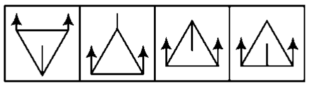




(a) (b) (c) (d)

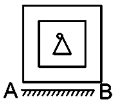
3.

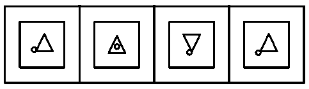




(a) (b) (c) (d)

4.

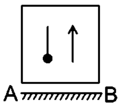


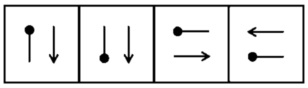


(a) (b) (c) (d)

[SSC (CPO) 2009]

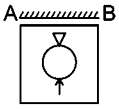
5.

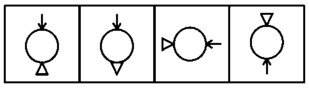




(a) (b) (c) (d)

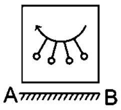
6.

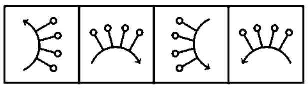




(a) (b) (c) (d) [UP B. Ed. 2011]

7.

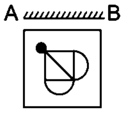


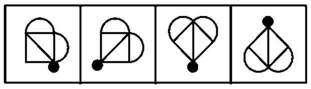


(a) (b) (c) (d)

Question Figure **Answer Figures**

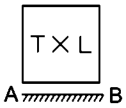
8.

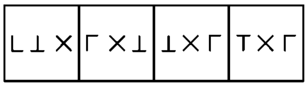




(a) (b) (c) (d)

9.





(a) (b) (c) (d)

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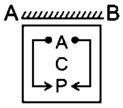

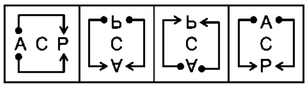

(a) (b) (c) (d)

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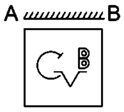

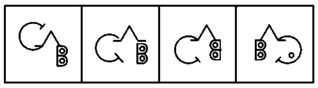

(a) (b) (c) (d)

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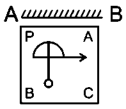

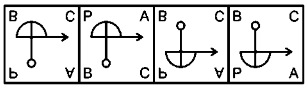

(a) (b) (c) (d)

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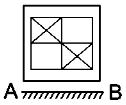
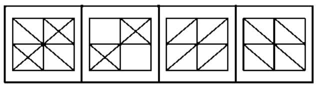
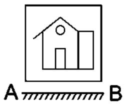


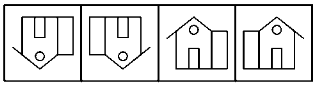


(a) (b) (c) (d)

[SSC (DEO & LDC) 2011]

14.





(a) (b) (c) (d)

[SSC (CGL) 2013]

Response & Interpretations **(12.2)**

1. (c) **2.** (d) **3.** (c) **4.** (c) **5.** (a) **6.** (a) **7.** (d) **8.** (b) **9.** (c) **10.** (c)
11. (b) **12.** (c) **13.** (b) **14.** (a)

Type 3 Mirror Image of Letters and Numbers

In such questions, a letter, number or a group of letters and/or numbers is given and the candidate is required to determine the mirror image of the letters and numbers according to the position of the mirror placed beside it.

Mirror Images of Capital Letters

Letter	A	B	C	D	E	F	G	H	I	J	K	L	M
Mirror Image	A	ᗺ	Ɔ	ᗡ	Ǝ	ꟻ	Ә	H	I	Ⴑ	ꓘ	⅃	M
Letter	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Mirror Image	И	O	ꟼ	Ϙ	Я	Ƨ	T	U	V	W	X	Y	Σ

(i) The letters which have the same mirror images are — A, H, I, M, O, T, U, V, W, X, Y

Mirror Images of Small Letters

Letter	a	b	c	d	e	f	g	h	i	j	k	l	m
Mirror Image	ɒ	d	ɔ	b	ɘ	ɟ	ϱ	ʜ	i	ꞁ	ʞ	l	m
Letter	n	o	p	q	r	s	t	u	v	w	x	y	z
Mirror Image	n	o	q	p	ɿ	ƨ	ƚ	u	v	w	x	γ	ƹ

(ii) The letters which have the same mirror images are — i, l, o, v, w, x

Mirror Images of Numbers

Digit	1	2	3	4	5	6	7	8	9	0
Mirror Image	Ɩ	ς	Ɛ	ᔭ	ᘕ	∂	ᒥ	8	ɘ	0

(iii) Numbers 0 and 8 have the same mirror image.

(iv) In the above discussion, the standard form of mirror image in which the mirror is placed vertically is given

The following examples would to give you a better idea about such type of questions

Directions (Example Nos. 10-13) In each of the following questions you are given a combination of letter's and/or numbers followed by four alternatives (a), (b), (c) and (d). Choose the alternative which most closely resembles the mirror image of the given combination.

***Ex* 10** FUN

(a) ИUF
(b) ℲᑎN
(c) ИUꟻ
(d) NUꟻ

Sol. (c) The correct mirror image is obtained as shown below

FUN ‖ ИUꟻ

***Ex* 11** 12698

(a) 1Ƨ698
(b) 8ɘ∂ς1
(c) 12968
(d) 1ς698

Sol. (*b*) The correct mirror image will be

12698 ‖ 8ɘ∂ςƖ

***Ex* 12** 76MP03J

(a) JƐ0ꟼM6ᒥ
(b) ႱƐ0Mꟼ6ᒥ
(c) ႱƐ0ꟼM∂ᒥ
(d) ႱƐ0ꟼM∂7

Sol. (*c*) The correct mirror image will be

76MPO3J ‖ ႱƐOꟼM∂ᒥ

***Ex* 13** PRAYER

(a) ꟼЯAYƎЯ
(b) ЯƎꟼAƎЯ
(c) ЯƎYAЯꟼ
(d) ꟼЯAYƎЯ

Sol. (*c*) The correct mirror image will be

PRAYER ‖ ЯƎYAЯꟼ

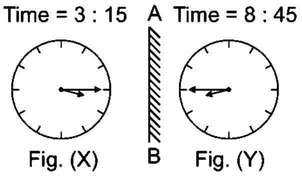
Type 4 Mirror Image of Clocks

In this type of questions, a candidate has to find the original positions of the hour hand and minute hand of a clock from the positions of the hour hand and the minute hand as seen in a mirror. On the basis of time indicated by mirror image of the clock, we have to find the actual time in the clock. The following examples will help understand the concept better.

***Ex* 14** A clock seen through a mirror shows quarter past three. What is the correct time shown by the clock?

(a) 9 : 45 (b) 9 : 15
(c) 8 : 45 (d) 3 : 15

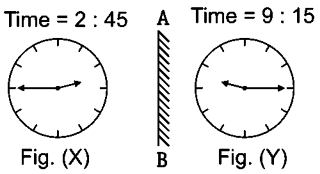
Sol. (c) It is clear from Fig. (X) that if seen through a mirror the time indicated by clock is 3:15. When the mirror is placed vertically at AB, the mirror image *i.e.*, Fig. (Y) shows the actual time in the clock *i.e.*, (8 : 45).



***Ex* 15** A clock seen through a mirror shows quarter to three. What is the correct time shown by the clock?

(a) 8 : 15 (b) 9 : 12 (c) 8 : 17 (d) 9 : 15

Sol. (*d*)



It is clear from Fig. (X) that if seen through a mirror the time indicated by clock is 2:45. When the mirror is placed vertically at AB, the mirror image *i.e.*, Fig. (Y) shows the actual time in the clock *i.e.*, (9 : 15).

K **Memory** ***Add-ons***

In case of words, letters and clocks, the mirror is always kept in standard form *i.e.*, vertically to obtain the mirror image unless otherwise stated.

Practice Corner **12.3**

Build your Confidence...

Directions (Q. Nos. 1-19) In each of the following questions, four alternatives are given which follow a word. You have to select one alternative which exactly matches with the mirror image of the word in the question.

1. VERBAL
(a) LABREV (b) LRVERA
(c) REVBAL (d) ⅃AᗺЯƎV

2. 247593
(a) 395742 (b) Ɛ6Ƨ7ᔭƧ
(c) 392457 (d) Ɛ6ƧᒍᔭƧ

3. ARIHANT
(a) TИAHIЯA (b) TNAHIRA
(c) TARIHAN (d) TRIHANA

4. NIRMALA
(a) ALAMRIN (b) A⅃AMЯIИ
(c) NRILAMA (d) INRMALA

5. FANTASY
(a) YƧATИAꟻ (b) FNTASAY
(c) YSATNAF (d) YFANTSAY

6. RADIANT
(a) TNAIDAR (b) TИAIᗡAЯ
(c) TRADIAN (d) TIANRAD

7. VINAYAKA
(a) INVAYAKA (b) AKAYANIV
(c) AꓘAYAИIV (d) NIVYAAKA

8. FROWNING
(a) ᘓИIИWOЯꟻ (b) ᘓИIИWORꟻ
(c) ᘓИIИMOЯꟻ (d) ᘓИI ИMOЯꟻ

9. PRECARIOUS
(a) ƧUOIЯAƆƎЯꟼ (b) SUOIRACERP
(c) SUOPRECARI (d) SPRECARIOU

10. PERFECTION
(a) NOITCEFERP (b) RPEFECTION
(c) ИOITƆƎꟻЯƎꟼ (d) ERPEFCTION

11. WINCHESTER

(a) ЯƎꓕƧƎHƆNI M (b) ЯƎꓕƧƎHƆИ IW

(c) ЯƎTƧƎHƆNI W (d) ЯƎTƧƎHƆИ IW

12. BENEDICTION

(a) NOITCIDENEB (b) NEBEDICTION

(c) ИOITƆIᗡƎИƎB (d) TIANRAD

13. PROCRASTINATE

(a) ETANITSARCORP (b) ƎTAИITƧAЯƆOЯꟼ

(c) RPPRCASTNITAE (d) ETPROCRASTINA

14. DL3N469F

(a) DL3469FN (b) ꟻɘ6ᔭИƐ⅃ᗡ

(c) ꟻ964ИE⅃ᗡ (d) F964N3DL

15. CAR27aug

(a) 6neㄥZЯAƆ (b) ǫuɒ7ƧЯAƆ

(c) guaCAR27 (d) gua72RAC

16. test5auto

(a) oʇu ɒ Ƨʇ ƨɘʇ (b) otua5tset

(c) tset5uato (d) oʇnɐ5ʇsəʇ

17. NU56p7uR

(a) Ru7P65uN (b) RNu56p7u

(c) ЯuꓶqəƧUИ (d) ИnəƧbꓶnᴚ

18. GANDHI1869

(a) 6981IHDNV⅁ (b) 1968IHDNAG

(c) ɘ68ıIHDИA⅁ (d) 196GANDHI8

19. KALINGA261B

(a) B162AGNILAK (b) 8Ɩ9ZV⅁NIꞀVꓘ

(c) KVΓIИɘVƧɘıB (d) 8ƖəƧA⅁ИI⅃Aꓘ

20. Looking into a mirror, the clock shows 9 : 30 as the time. The actual time is

(a) 2 : 30 (b) 3 : 30 (c) 4 : 30 (d) 6 : 30

21. When seen through a mirror, a clock shows 8 : 30. The correct time is

(a) 2 : 30 (b) 3 : 30

(c) 5 : 30 (d) 8 : 30

22. By looking in a mirror, it appears that it is 6 : 30 in the clock. What is the real time?

(a) 6 : 30 (b) 5 : 30

(c) 6 : 00 (d) 4 : 30

23. When seen through a mirror, a watch shows 12 : 15. The correct time is

(a) 12 : 30 (b) 1 : 15

(c) 12 : 45 (d) 11 : 45

Response & Interpretations **(12.3)**

1. (d) **2.** (b) **3.** (a) **4.** (b) **5.** (a) **6.** (b) **7.** (c) **8.** (a) **9.** (a) **10.** (c)

11. (d) **12.** (c) **13.** (b) **14.** (b) **15.** (b) **16.** (a) **17.** (c) **18.** (c) **19.** (d)

20. (*a*)

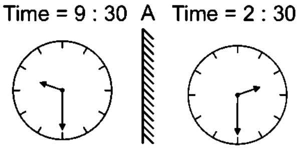


Fig. (X) Fig. (Y)

It is clear from Fig. (X) that if seen through a mirror, the time indicated by clock is 9 : 30. When the mirror is placed vertically at AB, its mirror image *i.e.*, Fig. (Y) shows the actual time in the clock *i.e.*, 2 : 30.

21. (*b*)

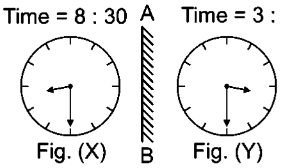


Fig. (X) Fig. (Y)

It is clear from Fig. (X) that if seen through a mirror, the time indicated by clock is 8 : 30. When the mirror is placed vertically at AB, its mirror image *i.e.*, Fig. (Y) shows the actual time in the clock *i.e.*, 3 : 30.

22. (*b*)

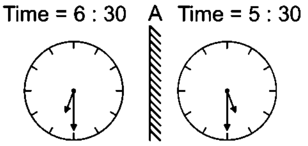


Fig. (X) Fig. (Y)

It is clear from Fig. (X) that if seen through a mirror, the time indicated by the clock is 6 : 30. When the mirror is placed vertically at AB, its mirror image *i.e.*, Fig. (Y) shows the actual time in the clock *i.e.*, 5 : 30.

23. (*d*)

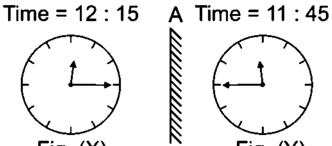


Fig. (X) Fig. (Y)

It is clear from Fig. (X) that if seen through a mirror, the time indicated by clock is 12 : 15. When the mirror is placed vertically at AB, its mirror image *i.e.*, Fig. (Y) shows the actual time in the clock *i.e.*, 11 : 45.

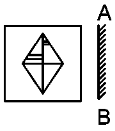
Master Exercise

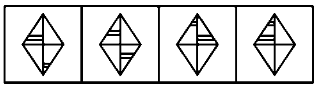
Take a Leap...

Directions (Q. Nos. 1-25) Which of the answer figure is exactly the mirror image of the given figure, when the mirror is placed on the line AB?

Question Figure **Answer Figures**

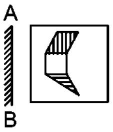
1.

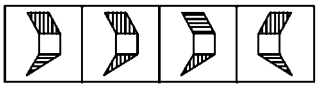




[SSC (FCI) 2012]

2.





[SSC (Multitasking) 2013]

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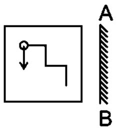

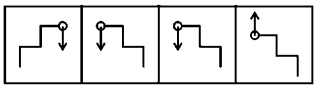

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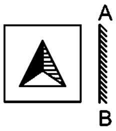
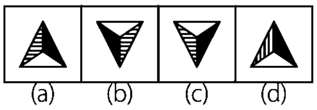
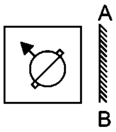
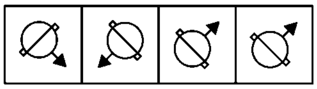




[SSC (Constable) 2012]

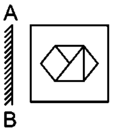
5.

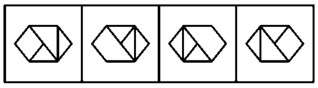




[MAT 2013]

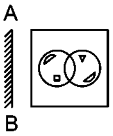
6.

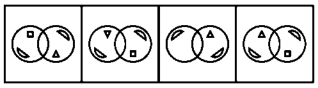




[SSC (10+2), DEO, LDC 2013]

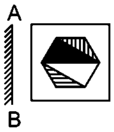
7.

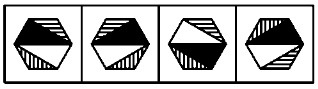




Question Figure **Answer Figures**

8.





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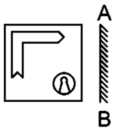

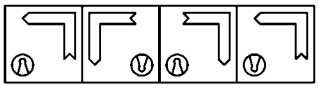

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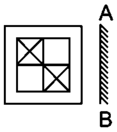
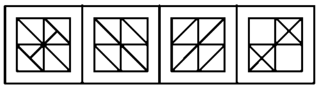
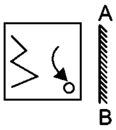
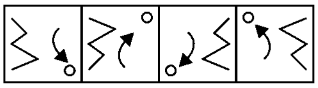




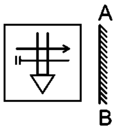
[SSC (10 +2) DEO, LDC, 2013]

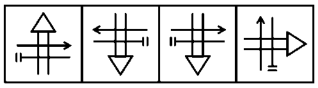
11.



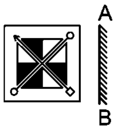


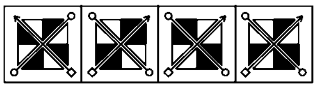
12.





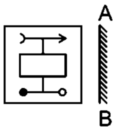
13.

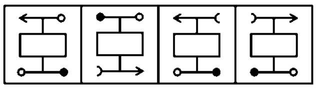




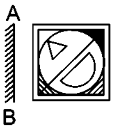
[SSC (CGL) 2013]

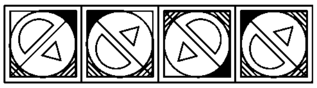
14.





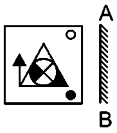
15.

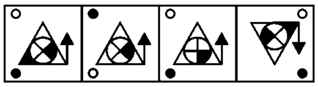




Question Figure **Answer Figures**

16.

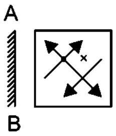


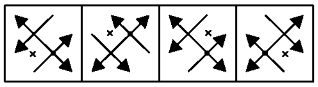


(a) (b) (c) (d)

[SSC (Multitasking) 2013]

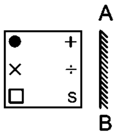
17.

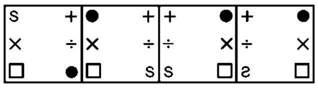




(a) (b) (c) (d)

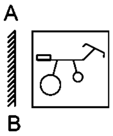
18.

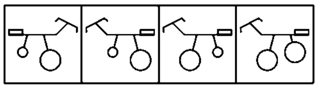




(a) (b) (c) (d)

19.

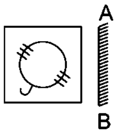


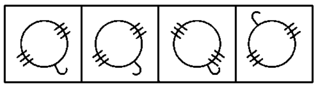


(a) (b) (c) (d)

[SSC (CGL) 2011]

20.

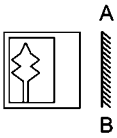


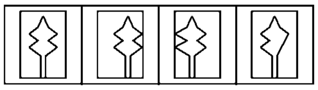


(a) (b) (c) (d)

Question Figure **Answer Figures**

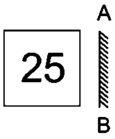
21.

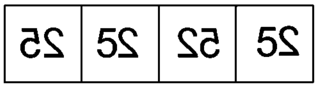




(a) (b) (c) (d)

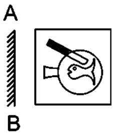
22.

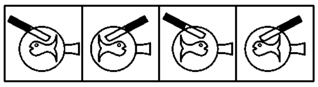




(a) (b) (c) (d)

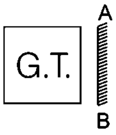
23.

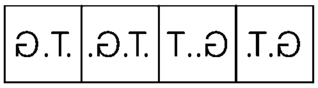




(a) (b) (c) (d)

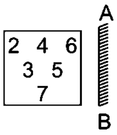
24.

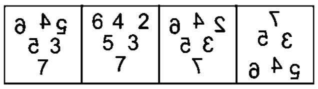




(a) (b) (c) (d)

25.



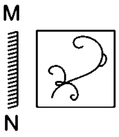


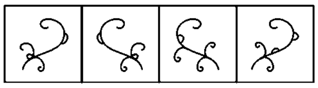
(a) (b) (c) (d)

Directions (Q. Nos. 26 -27) In the following questions, if a mirror is placed on the line MN, then which of the answer figures is the right image of the given figures?

Question Figure **Answer Figures**

26.



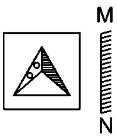


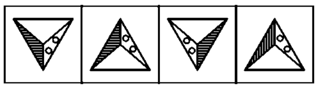
(a) (b) (c) (d)

[SSC (CPO) 2013]

Question Figure **Answer Figures**

27.



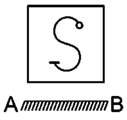


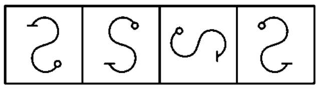
(a) (b) (c) (d)

Directions (Q. Nos. 28-33) Find the mirror image of the figure given in the question figures out of the figures given in the answer choices, when the mirror is placed horizontally (at the top or bottom of the question figure) on the line AB.

Question Figure **Answer Figures**

28.

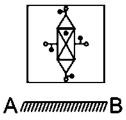


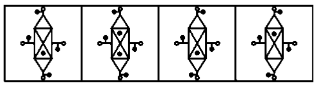


(a) (b) (c) (d)

Question Figure **Answer Figures**

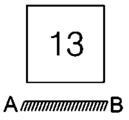
29.

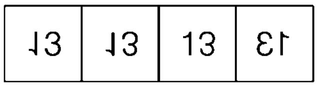


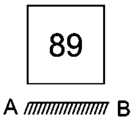


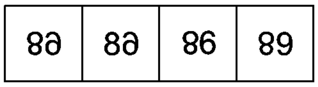
(a) (b) (c) (d)

Question Figure **Answer Figures**

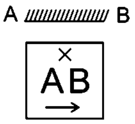
30. 

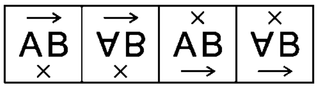

(a) (b) (c) (d)

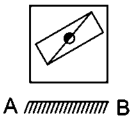
31. 

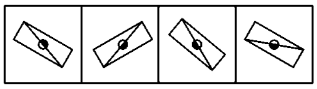

(a) (b) (c) (d)

Question Figure **Answer Figures**

32. 


(a) (b) (c) (d)

33. 


(a) (b) (c) (d)

Directions (Q. Nos. 34-44) In each of the following questions four alternatives are given which follow a combination of alphabets and/or numbers. You have to select one alternative which exactly matches with the mirror image of the given combination.

34. **12388**
(a) 88ƐꙄɿ (b) 883Ꙅɿ
(c) 88Ɛ2ɿ (d) 88ƐꙄ1

35. **56834**
(a) ᔭƐ8∂Ƨ (b) ᔭƐ89Ƨ
(c) ᔭƐ865 (d) ᔭ38∂Ƨ

36. **FIXING**
(a) GNIXIF (b) ᘓИIXIꟻ
(c) ᘓNIXIᖷ (d) GIFIXN

37. **STROKE**
(a) ESTROK (b) ETROKS
(c) EROKTS (d) ƎꓘOЯTƧ

38. **BUZZER**
(a) ЯƎꙀꙀUB (b) RUZZEB
(c) ЯƎꙀꙀՈᗺ (d) REZZBU

39. **QUALITY**
(a) YTILAUQ (b) YUALITQ
(c) YIꓕꓶAUϘ (d) YTIꓶAUϘ

40. **APRIL**
(a) ⅃IЯꟼA (b) I⅃ЯꟼA
(c) ⅃IЯꟼA (d) ⅃IRPA

41. **320095**
(a) Ƨ900Ꙅ3 (b) Ƨ900ꙄƐ
(c) Ƨ600ꙄƐ (d) Ƨ∂00ꙄƐ

42. **WESTERN**
(a) NRETSEW (b) NꓤƎꓕSƎW
(c) NSETERW (d) ИЯƎTƧƎW

43. **MISSION**
(a) NOIƧƧIM (b) ИOISSIW
(c) И OIƧƧIW (d) ИOIƧƧIM

44. **QUANTITATIVE**
(a) EΛIꓕ∀ꓕIꓕИ∀ՈϬ (b) EVITATITNAUQ
(c) EUANTITATIVQ (d) ƎVITATITИAUϘ

45. Looking into a mirror, the clock shows 12 : 30 as the time. The actual time is
(a) 12 : 30 (b) 9 : 30 (c) 11 : 30 (d) 1 : 30

46. When seen through a mirror, a watch shows 8 : 45. The correct time is
(a) 4 : 45 (b) 4 : 15 (c) 3 : 45 (d) 3 : 15

47. When seen through a mirror, a watch shows 5 : 15. The correct time is
(a) 6 : 15 (b) 7 : 15 (c) 6 : 45 (d) 7 : 45

Response & Interpretations (Master Exercise)

1. (b) **2.** (a) **3.** (a) **4.** (a) **5.** (c) **6.** (d) **7.** (b) **8.** (d) **9.** (a) **10.** (d)
11. (c) **12.** (b) **13.** (d) **14.** (c) **15.** (b) **16.** (a) **17.** (b) **18.** (d) **19.** (b) **20.** (a)
21. (b) **22.** (a) **23.** (b) **24.** (d) **25.** (c) **26.** (b) **27.** (b) **28.** (a) **29.** (c) **30.** (b)
31. (a) **32.** (b) **33.** (c) **34.** (a) **35.** (a) **36.** (b) **37.** (d) **38.** (a) **39.** (d) **40.** (c)
41. (b) **42.** (d) **43.** (d) **44.** (d) **45.** (c) **46.** (d) **47.** (c)

13

Water Image

Water Image is the reflection of an object into water. It is the vertically inverted image obtained by turning the object upside down. The water image of the figure looks like the mirror image of the figure when the mirror is placed horizontally at the bottom of the question figure.

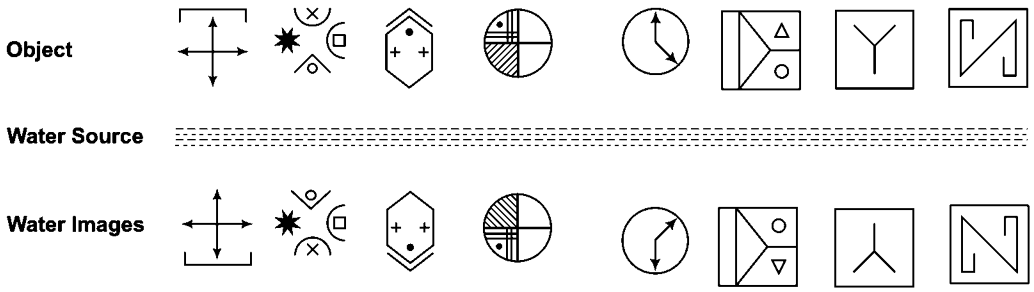
Different types of questions covered in this chapter are as follows

- Water Image of Figure/Symbol/Sign
- Water Image of Letters and Numbers

In questions based on water image, the candidate is required to determine how the image of object would look like in water when it is placed near a water source.

Mostly the water image of a figure is different from the original figure which is because of the dissimilarity in the upper and lower half of the figure. This can be better understood with the help of examples illustrated below

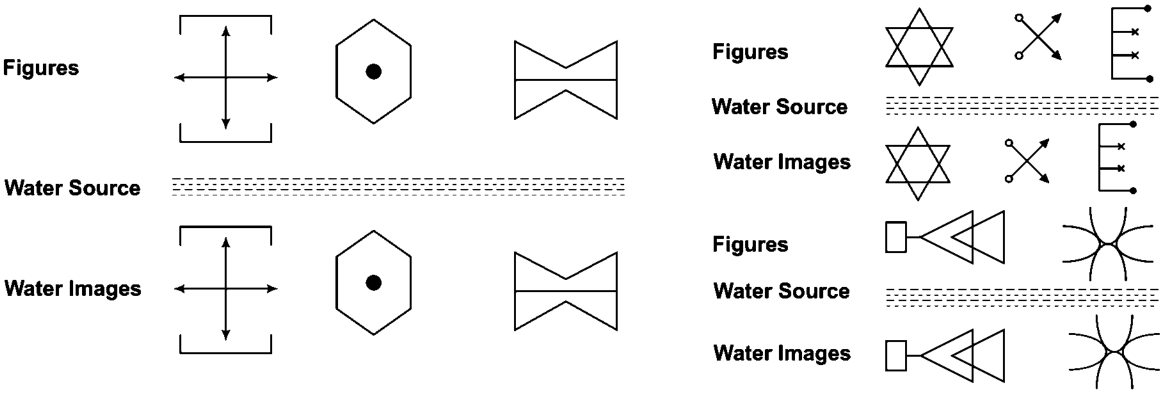
Example of Different Water Images of Figures



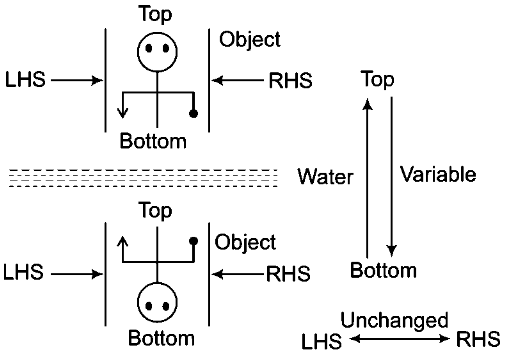
Sometimes it happens that water image formed is identical to the original figure. This is the case when the upper half of the figure is similar to the lower half of the figure but in opposite direction.

This can be better understood with the help of several identical water images of figures which are given below

Example of Identical Water Images of Figures


Figures
Water Source
Water Images
Figures
Water Source
Water Images
Figures
Water Source
Water Images

From the above examples, it is clear that in the water image, (LHS) and (RHS) remain unchanged while upper and lower parts get interchanged, means top becomes bottom and bottom becomes top.

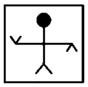

Top
Object
LHS
RHS
Bottom
Top
Water
Variable
Top
Object
LHS
RHS
Bottom
Bottom
Unchanged
LHS
RHS

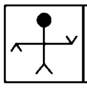
Type 1 Water Image of Figure/Symbol/Sign

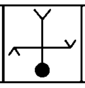
In this type of questions, candidates are asked to find the water image of symbol, signs or figure which consists of both symbol and signs or any other pattern. The following examples will give a better idea of the questions asked in exams.

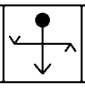
Directions (Example Nos. 1-4) Find the water image of the object given in the question figure denoted by (A), out of the figures given in the answer choices, (a), (b), (c) and (d).

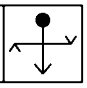
Ex 1


(A)


(a)


(b)


(c)


(d)

Sol. (*b*) The figure in option (b) represents the correct water image of figure (A) as shown below

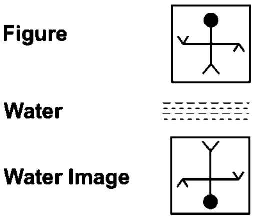
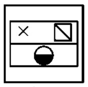
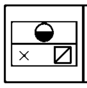
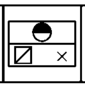


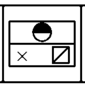
Figure
Water
Water Image

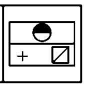
Ex 2


(A)


(a)


(b)


(c)


(d)

Sol. (*c*) The figure in option (c) represents the correct water image of figure (A) as shown below

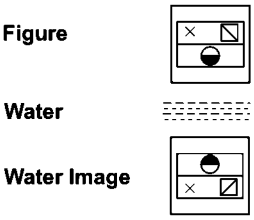
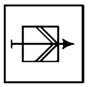
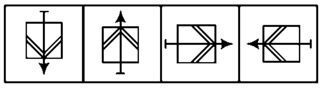


Figure
Water
Water Image

Ex 3

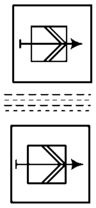


(A)

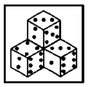


(a) (b) (c) (d)

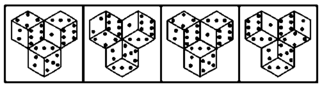
Sol. (c) The figure in option (c) represents the correct water image of figure (A) as shown below



Ex 4



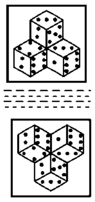
(A)



(a) (b) (c) (d)

[SSC (CGL) 2010]

Sol. (b) The figure in option (b) represent the correct water image of figure (A) as shown below



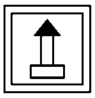
Practice Corner **13.1**

Build your Confidence...

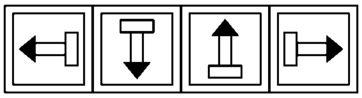
Directions (Q. Nos. 1-20) Find the water image of the object given in the question figure denoted by (A) out of the figures given in the answer figures (a), (b), (c) and (d).

Question Figure **Answer Figures**

1.

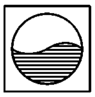


(A)

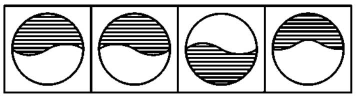


(a) (b) (c) (d)

2.

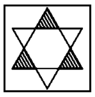


(A)

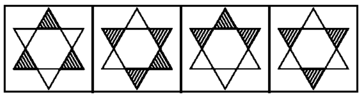


(a) (b) (c) (d) [UP B.Ed. 2009]

3.

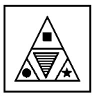


(A)

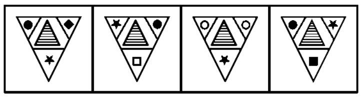


(a) (b) (c) (d)

4.



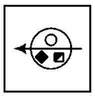
(A)



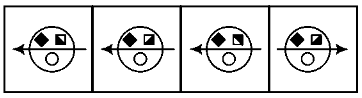
(a) (b) (c) (d)

[SSC (10+2) 2006]

5.



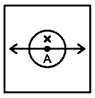
(A)



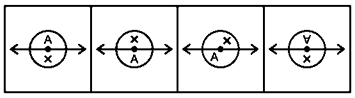
(a) (b) (c) (d)

[RRB (ASM) 2006]

6.



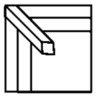
(A)



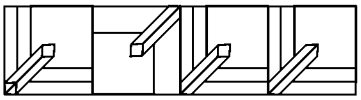
(a) (b) (c) (d) [UP B. Ed. 2012]

Question Figure **Answer Figures**

7.

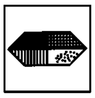


(A)

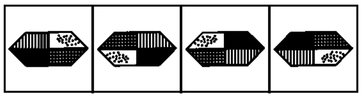


(a) (b) (c) (d)

8.

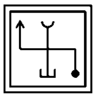


(A)

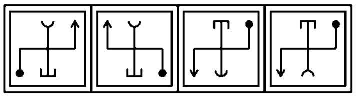


(a) (b) (c) (d)

9.

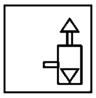


(A)

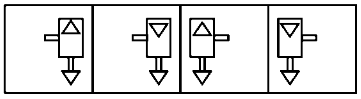


(a) (b) (c) (d) [UP B. Ed. 2011]

10.



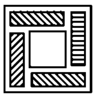
(A)



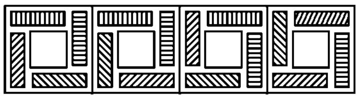
(a) (b) (c) (d)

[RRB (ASM) 2008]

11.



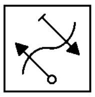
(A)



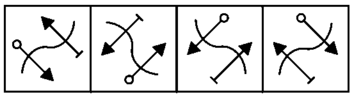
(a) (b) (c) (d)

[RRB (Group 'D') 2007, Delhi Police (SI) 2005]

12.



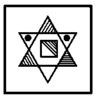
(A)



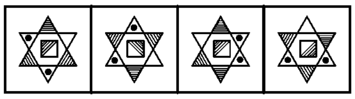
(a) (b) (c) (d)

Question Figure **Answer Figures**

13.

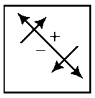


(A)

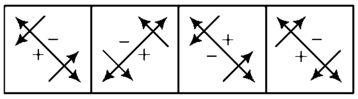


[SSC (10+2) 2006]

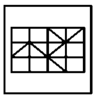
14.



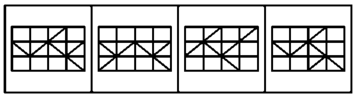
(A)



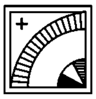
15.



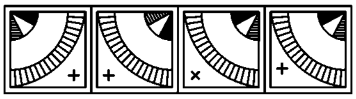
(A)



16.

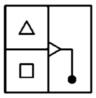


(A)

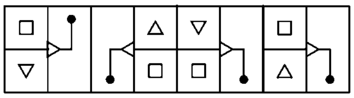


Question Figure **Answer Figures**

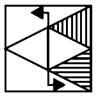
17.



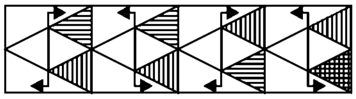
(A)



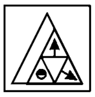
18.



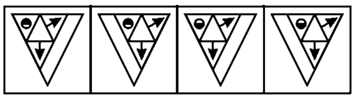
(A)



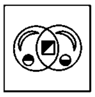
19.



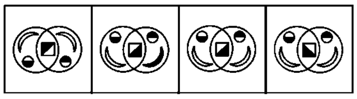
(A)



20.



(A)



Response & Interpretations (13.1)

1. (b)	**2.** (b)	**3.** (d)	**4.** (d)	**5.** (a)	**6.** (d)	**7.** (c)	**8.** (a)	**9.** (d)	**10.** (a)
11. (d)	**12.** (c)	**13.** (d)	**14.** (b)	**15.** (d)	**16.** (d)	**17.** (a)	**18.** (a)	**19.** (d)	**20.** (d)

Type 2 Water Image of Letters and Numbers

The candidates are required to learn how the letters and numbers get reflected in water and follow the same to solve the problems based on water image of letters and numbers.

Water Images of Capital Letters

Letter	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Water image	∀	B	C	D	E	Ⅎ	⅁	H	I	ᒉ	K	Γ	W	И	O	b	Ό	ᴚ	Ƨ	⊥	∩	Λ	M	X	⅄	Σ

The letters which have water images identical to the original letter are — C, D, E, H, I, O, X

Water Images of Small Letters

Letter	a	b	c	d	e	f	g	h	i	j	k	l	m
Water image	ɐ	p	c	q	ǝ	ɟ	ƃ	ɥ	!	ɾ	ʞ	l	ɯ
Letter	n	o	p	q	r	s	t	u	v	w	x	y	z
Water image	u	o	b	d	ɹ	ƨ	ʇ	n	ʌ	ʍ	x	ʎ	ꙁ

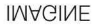
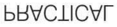
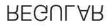
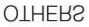
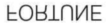
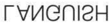
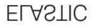
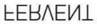
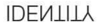
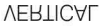
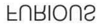
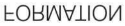
The letters which have water images identical to the original letter are — c, l, o, x.

Water Images of Digits

Digits	0	1	2	3	4	5	6	7	8	9
Water Image	0	⇂	ᘔ	3	ᔭ	Ƽ	ɘ	ㄥ	8	ə

Numbers 0, 3 and 8 have water images similar to the original numbers.

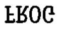
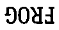
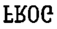
Now, some words with their water images are given below

Words	Water Image	Words	Water Image
IMAGINE		PRACTICAL	
REGULAR		OTHERS	
FORTUNE		LANGUISH	
ELASTIC		FERVENT	
IDENTITY		VERTICAL	
FURIOUS		FORMATION	

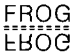
The following examples will give a better idea about the types of questions asked in exams

Directions (Example Nos. 5-12) In each of the following questions, find the water image of the set of letters and/or digits given in the question figure out of the four answer choices (a), (b), (c) and (d).

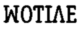
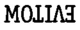
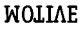
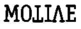
***Ex* 5** FROG

(a) 
(b) GORF
(c) 
(d) 

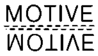
Sol. (*a*) The given word's reflection would be seen in the water as



***Ex* 6** MOTIVE

(a) 
(b) 
(c) 
(d) 

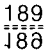
Sol. (*c*) The given word's reflection would be seen in the water as



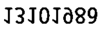
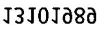
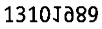
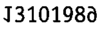
***Ex* 7** 189

(a)
(b)
(c)
(d)

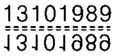
Sol. (*a*) Reflection of the given number would be seen in the water as



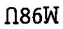
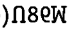
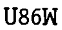
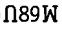
***Ex* 8** 13101989

(a) 
(b) 
(c) 
(d) 

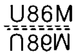
Sol. (*b*) Reflection of the given number would be seen in the water as



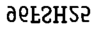
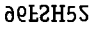
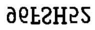
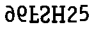
***Ex* 9** U86M

(a) 
(b) 
(c) 
(d) 

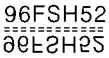
Sol. (*b*) Reflection of the given group of letters and numbers would be seen in the water as



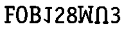
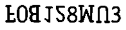
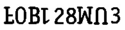
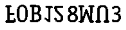
***Ex* 10** 96FSH52

(a) 
(b) 
(c) 
(d) 

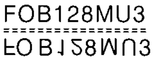
Sol. (*c*) Reflection of the given group of letters and numbers would be seen in the water as



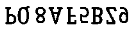
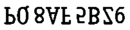
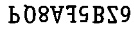
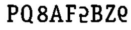
***Ex* 11** FOB128MU3

(a) 
(b) 
(c) 
(d) 

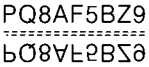
Sol. (*d*) Reflection of the given group of letters and numbers would be seen in the water as



***Ex* 12** PQ8AF5BZ9

(a) 
(b) 
(c) 
(d) 

Sol. (*a*) Reflection of the given group of letters and numbers would be seen in the water as



Practice Corner **13.2**

Build your Confidence...

Directions (Q. Nos. 1-20) In each of the following questions, a word or a number is followed by four alternatives (a), (b), (c) and (d) showing possible water images of that word or number. One out of these four alternatives shows the exact water image of that word or number. Choose the alternative which shows the correct water image of that word or number.

1. 013

2. 3713

3. CORDIAL

4. FECUND

5. POLEMIC

6. RADIANT

7. SARCASM

8. SURFACE

9. QUESTION

10. MUNDANE

11. DETERRENT

12. SUPERFLOUS

13. PRECARIOUS

14. OBLITERATE

15. D6Z7F4

16. 96FSH78

17. U4P15B7

18. 5DOB6V2

19. VAYU8436

20. DL2CA34OO

Response & Interpretations (13.2)

1. (c)	**2.** (b)	**3.** (c)	**4.** (b)	**5.** (c)	**6.** (d)	**7.** (d)	**8.** (d)	**9.** (a)	**10.** (c)
11. (b)	**12.** (d)	**13.** (a)	**14.** (a)	**15.** (c)	**16.** (c)	**17.** (c)	**18.** (d)	**19.** (b)	**20.** (a)

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-21) In each of the following questions, a question figure is followed by four figures (a), (b), (c) and (d), which show the possible water images of the question figure. Choose one out of these four figures which shows the correct water image of the question figure in each case.

1. **rise**

2. **wrote**

3. **FRUIT**

4. **EXPOSE**

(a) ESOPXE
(b) EXPOSE
(c)
(d) EPOSXE

5. **STRAIN**

6. **IMAGES**

(a)
(b) SEGAMI
(c)
(d)

7. **FAMILY**

8. **bridge**

9. **CLOSELY**

10. **DISCLOSE**

(a)
(b)
(c) ESOLCSID
(d)

11. **ACOUSTIC**

12. **NUCLEAR**

13. **QUARREL**

14. **national**

15. **monday**

(a) yadnom
(b)
(c)
(d)

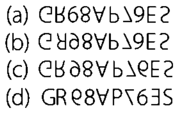
16. **TERMINATE**

17. **UP15847**

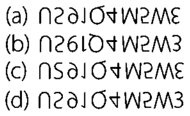
18. **RAJ589D8**

19. **50JA32DEO6**

20. **GR98AP76ES**



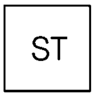
21. **US91Q4M5W3**

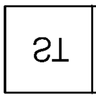
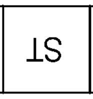
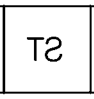
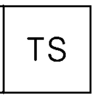


Directions (Q. Nos. 22-37) Find the water image of the object given in the question figure denoted by (A) out of the figures given in the answer figures (a), (b), (c) and (d).

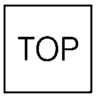
Question Figure **Answer Figures**

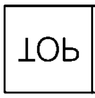
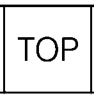
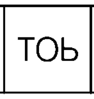
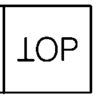
22.



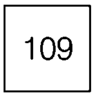
(A)

(a)

(b)

(c)

(d)

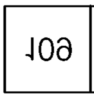
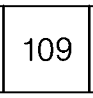
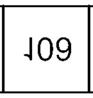
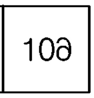
23.



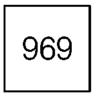
(A)

(a)

(b)

(c)

(d)

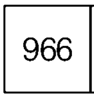
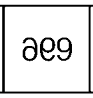
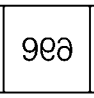
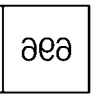
24.



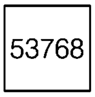
(A)

(a)

(b)

(c)

(d)

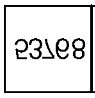
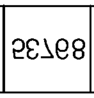
25.



(A)

(a)

(b)

(c)

(d)

26.



(A)

(a)

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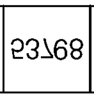
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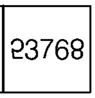
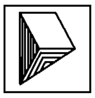
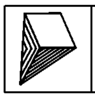
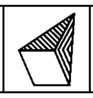

(d)

27.


(A)

(a)

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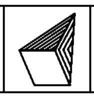
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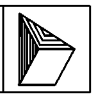
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[UP B. Ed. 2012]

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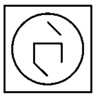
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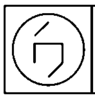
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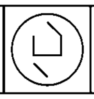
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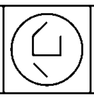
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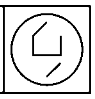
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[GIC 2009]

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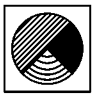
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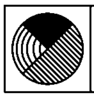
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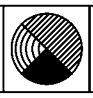
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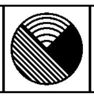
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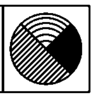
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Question Figure **Answer Figures**

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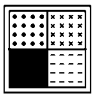
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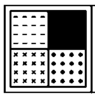
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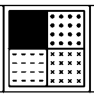
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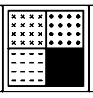
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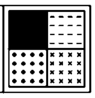
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[SSC (CGL) 2013]

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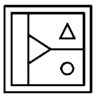
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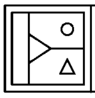
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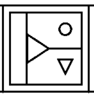
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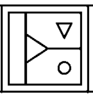
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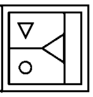
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[RRB (ALP) 2009]

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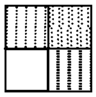
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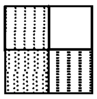
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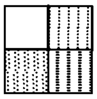
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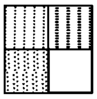
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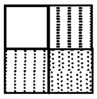
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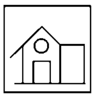
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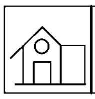
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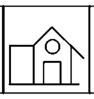
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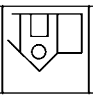
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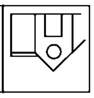
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[SSC (CGL) April 2014]

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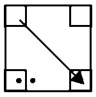
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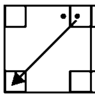
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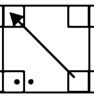
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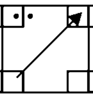
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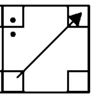
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[RRB 2006]

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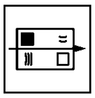
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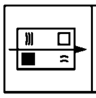
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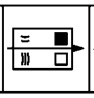
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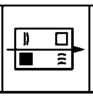
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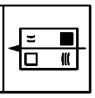
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[SSC (CPO) 2008]

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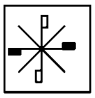
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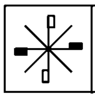
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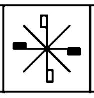
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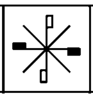
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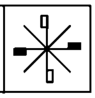
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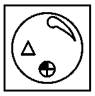
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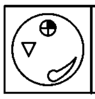
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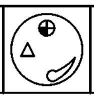
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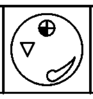
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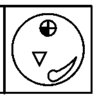

(d)

Response & Interpretations (Master Exercise)

1. (a) **2.** (c) **3.** (b) **4.** (c) **5.** (d) **6.** (d) **7.** (d) **8.** (b) **9.** (c) **10.** (b)
11. (b) **12.** (d) **13.** (d) **14.** (d) **15.** (d) **16.** (c) **17.** (a) **18.** (a) **19.** (b) **20.** (c)
21. (d) **22.** (a) **23.** (a) **24.** (a) **25.** (d) **26.** (a) **27.** (d) **28.** (d) **29.** (c) **30.** (d)
31. (b) **32.** (d) **33.** (c) **34.** (c) **35.** (a) **36.** (b) **37.** (c)

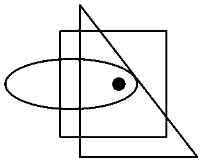
14

Dot Situation

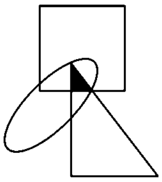
Dot Situation relate to a activity in which we have to find a common characteristic between a dot placed in between some figure and enclosed area by the same figures.

This chapter deals with the questions in which a group of geometrical shapes with a dot is given and it is asked to find from the given options, the one which is similar to the given group of geometrical shapes. Each of the four (or more) answer figures is composed of a cluster of the same type of geometrical shapes (that are given in the question figure) and the correct answer figure is the one which contains an area common to the shapes that have been marked by the dot in the question figure.

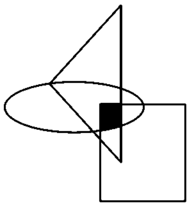
Let us consider an example



In the above figure, a group of three geometrical shapes *i.e.,* a square, a triangle and an oval is given. A dot is placed such that it is common to all the three, so another group of geometrical shapes similar to the one shown above is that which contains an area common to all the three shapes as shown below



or

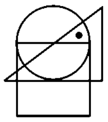


Any other such group having a region common to all the three shapes holds a similar relationship with the group of geometrical shapes given above with the dot.

Let us see some illustrative examples given below to have a better idea about the type of questions asked

Directions (Example Nos. 1-3) In the following questions, one or more dots are placed in the figure marked as (A). The figure is followed by four alternatives marked as (a), (b), (c) and (d). One out of these four options contains region(s) common to the circle, square, triangle, similar to that marked by the dot in figure (A).

***Ex* 1** **Question Figure** **Answer Figures**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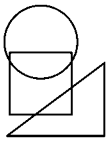
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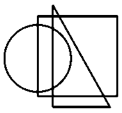
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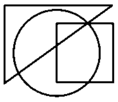
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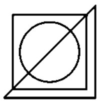
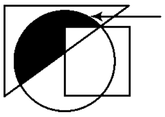
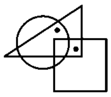

(d)

Sol. (*c*) In figure (A), the dot is placed in the region which is common to the circle and triangle. Now, we have to search similar common region in the four options. Only in figure (c), we find such a region which is common to the circle and triangle.


Common to the circle and triangle

***Ex* 2** **Question Figure** **Answer Figures**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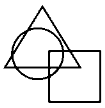
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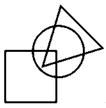
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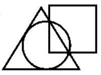
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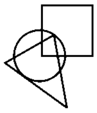
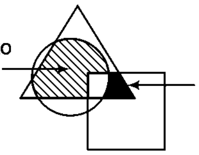
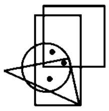

(d)

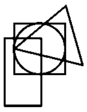
Sol. (*a*) One dot occupies the region which is common to the circle and triangle and the other dot occupies the region which is common to the triangle and square. Out of all the answer figures, only answer figure (a) possesses a region which is common to the circle and triangle and a region which is common to the triangle and square.

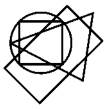

Common to circle and triangle

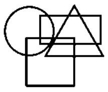
Common to triangle and square

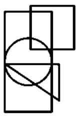
***Ex* 3** **Question Figure** **Answer Figures**


(A)


(a)


(b)

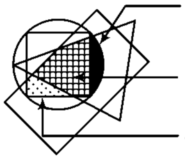

(c)


(d)

[Hotel Mgmt 2005]

Sol. (*b*) One of the three dots occupies the region which is common to the circle, rectangle and triangle; another dot occupies the region which is common to the triangle, circle, rectangle and square and the third dot occupies the region which is common to the circle, rectangle and square.

These three characteristics as shown by these three dots are found in figure (b). It possesses region which is common to the circle, rectangle and triangle, a region which is common to the triangle circle, rectangle, and square and a region which is common to the circle, rectangle and square.


Common to the triangle, rectangle and circle

Common to the triangle, square, circle and rectangle

Common to the circle, rectangle and square

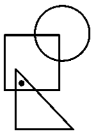
Master Exercise

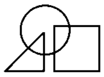
Take a Leap...

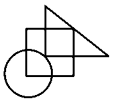
Directions (Q. Nos. 1-31) In the following questions, one or more dots are placed in the figure marked as (A). This figure is followed by four alternatives marked as (a), (b), (c) and (d). One out of these four options contains region(s) common to circle, square, triangle, similar to that marked by the dot in figure (A).

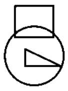
Question Figure **Answer Figures**

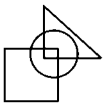
1.


(A)


(a)


(b)


(c)


(d)

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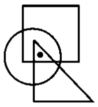
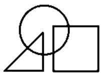

(A)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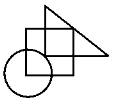
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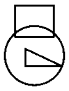
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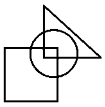
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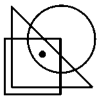
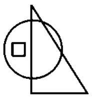
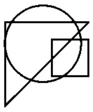
3.


(A)


(a)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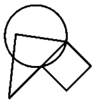
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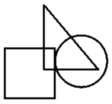
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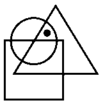
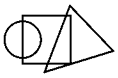
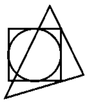
4.


(A)


(a)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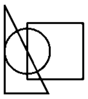
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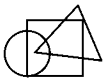
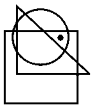

(d)

[Hotel Mgmt 1996]

5.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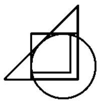
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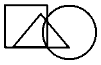
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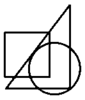
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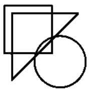
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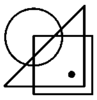
6.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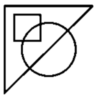
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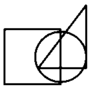
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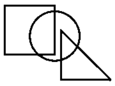
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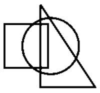
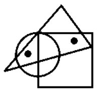

(d)

[NTSE 1994]

7.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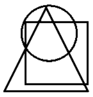
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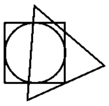
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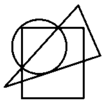
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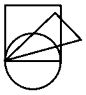
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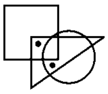
[Hotel Mgmt 1996]

Question Figure **Answer Figures**

8.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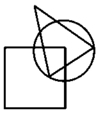
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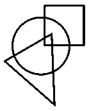
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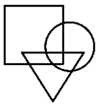
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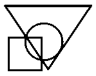
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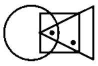
9.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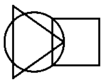
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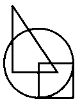
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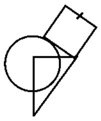
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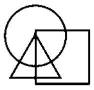
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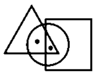
10.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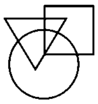
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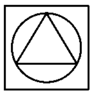
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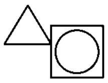
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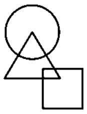
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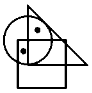
11.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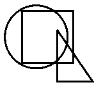
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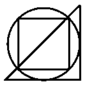
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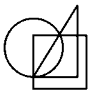
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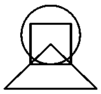
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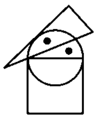
12.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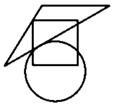
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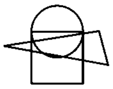
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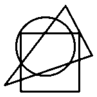
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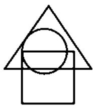
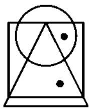

(d)

[Hotel Mgmt 1995]

13.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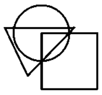
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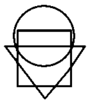
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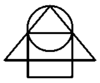
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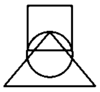
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[Hotel Mgmt 1995]

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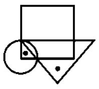
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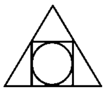
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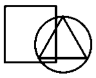
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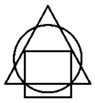
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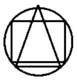
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Question Figure **Answer Figures**

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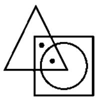
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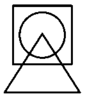
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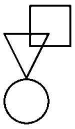
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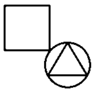
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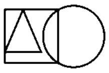
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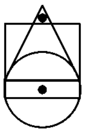
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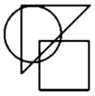
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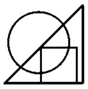
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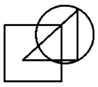
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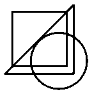
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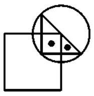
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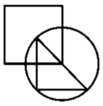
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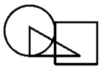
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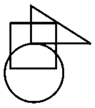
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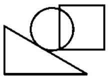
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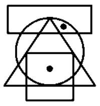
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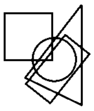
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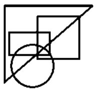
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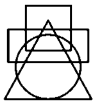
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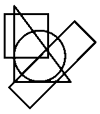
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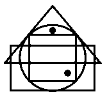
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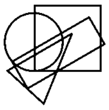
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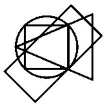
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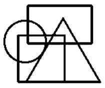
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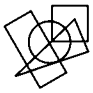
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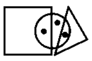
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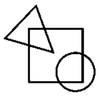
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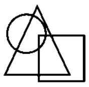
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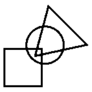
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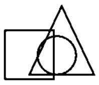
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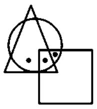
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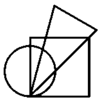
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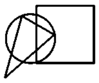
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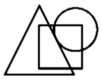
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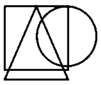
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[Hotel Mgmt 1997]

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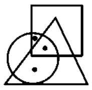
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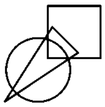
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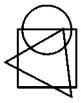
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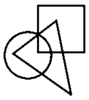
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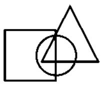
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Question Figure **Answer Figures**

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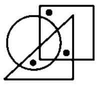
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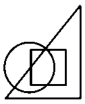
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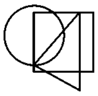
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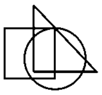
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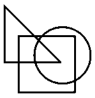
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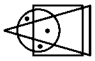
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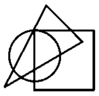
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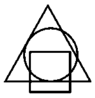
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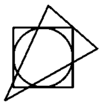
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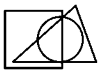
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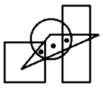
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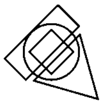
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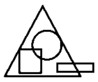
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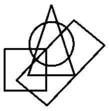
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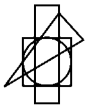
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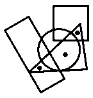
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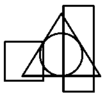
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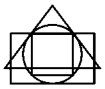
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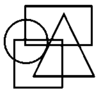
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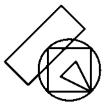
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[Hotel Mgmt 1996]

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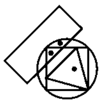
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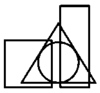
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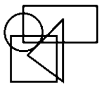
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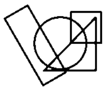
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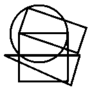
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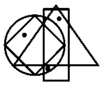
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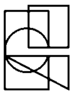
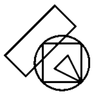
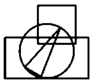

(a)

(b)

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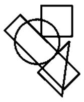
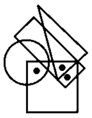
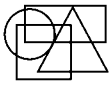
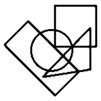

(d)

29.


(A)

(a)

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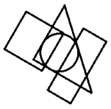
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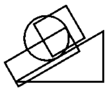
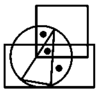
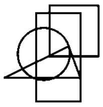
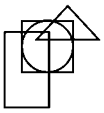

(d)

30.


(A)

(a)

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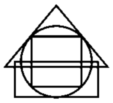
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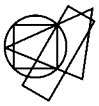
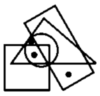
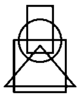
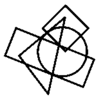

(d)

31.


(A)

(a)

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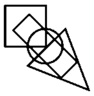
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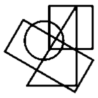
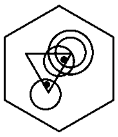
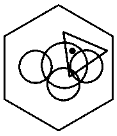
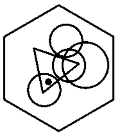
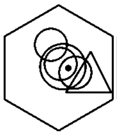

(d)

32.



To which hexagon below can a dot be added, so that both dots then meet the same conditions as the two dots in the hexagon above?


(a)

(b)

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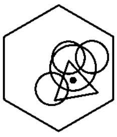
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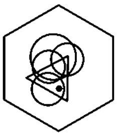
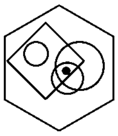
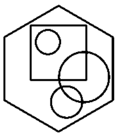
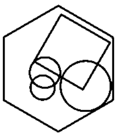
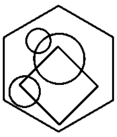

(e)

33.



To which hexagon below can a dot be added so that it then meets the same conditions as in the hexagon above?


(a)

(b)

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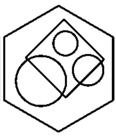
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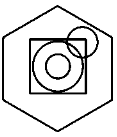
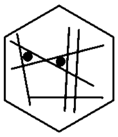
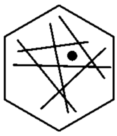
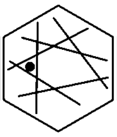
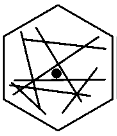

(e)

34.



To which hexagon below can a dot be added so that both dots then meet the same conditions as the two dots in the hexagon above?


(a)

(b)

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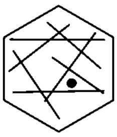
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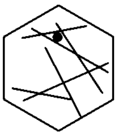
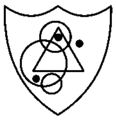
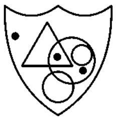
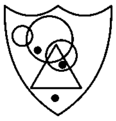

(e)

35.



Which shield below has most in common with the shield above?


(a)

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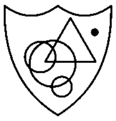
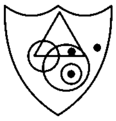

(c)

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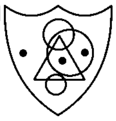
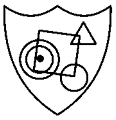
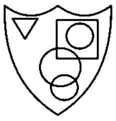
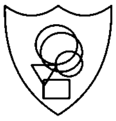
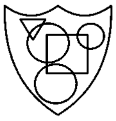
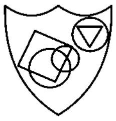
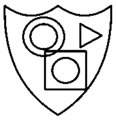

(e)

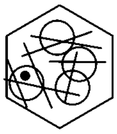
36.



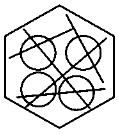
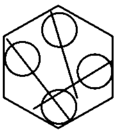
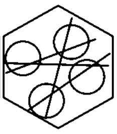
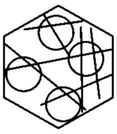
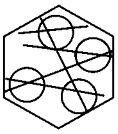
To which shield below can a dot be added so that it meets the same conditions as in the shield above?


(a)

(b)

(c)

(d)

(e)

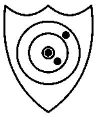
37.



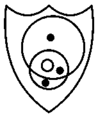
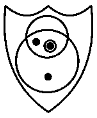
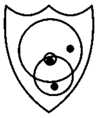
To which hexagon below can a dot be added so that it then meets the same conditions as in the hexagon above?


(a)

(b)

(c)

(d)

(e)

38.



The contents of which shield below are most like the contents of the shield above?


(a)

(b)

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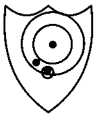
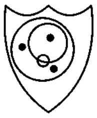
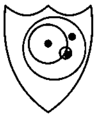
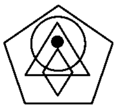
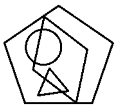
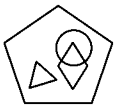
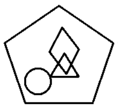
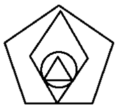
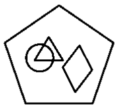

(d)

(e)

(f)

39.

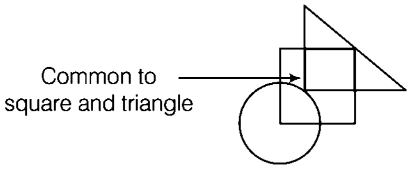


To which pentagon below can a dot be added so that it meets the same conditions as in the pentagon above?

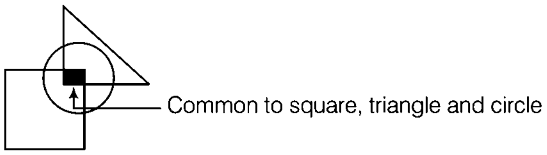

(a)

(b)

(c)

(d)

(e)

Response & Interpretations (Master Exercise)

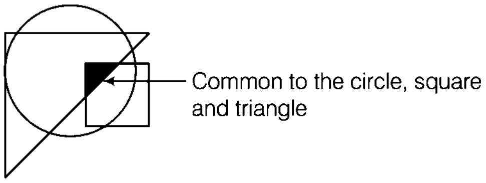
1. (*b*)


Common to
square and triangle

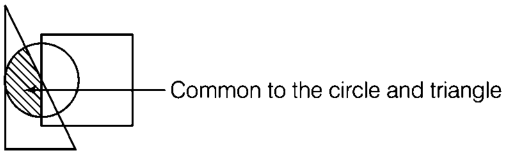
2. (*d*)


Common to square, triangle and circle

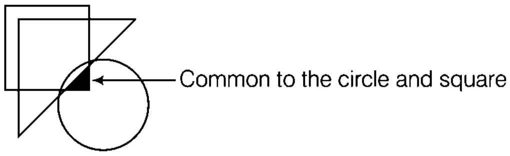
3. (*b*)


Common to the circle, square
and triangle

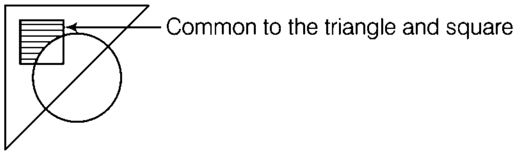
4. (*c*)


Common to the circle and triangle

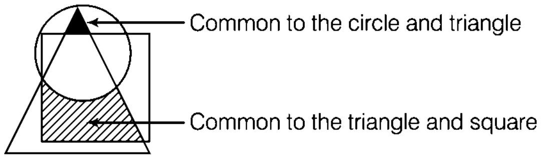
5. (*d*)


Common to the circle and square

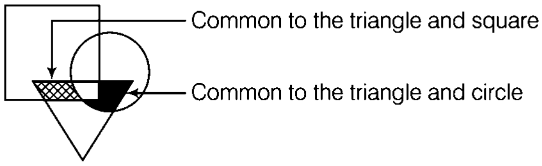
6. (*a*)


Common to the triangle and square

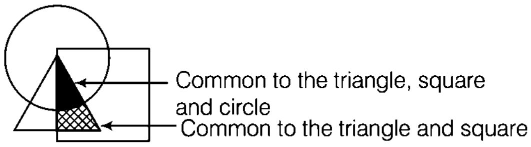
7. (*a*)


Common to the circle and triangle
Common to the triangle and square

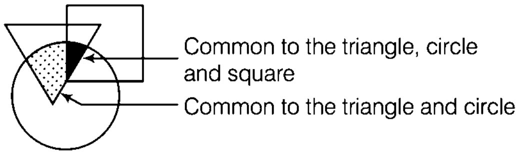
8. (*c*)


Common to the triangle and square
Common to the triangle and circle

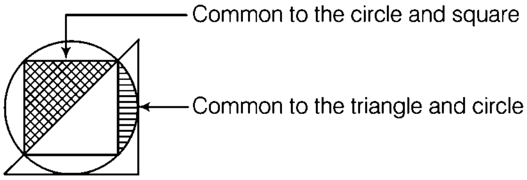
9. (*d*)


Common to the triangle, square
and circle
Common to the triangle and square

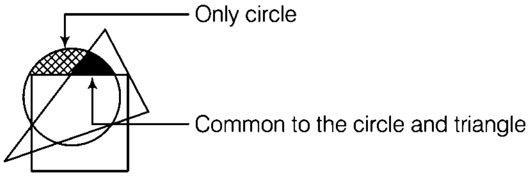
10. (*a*)


Common to the triangle, circle
and square
Common to the triangle and circle

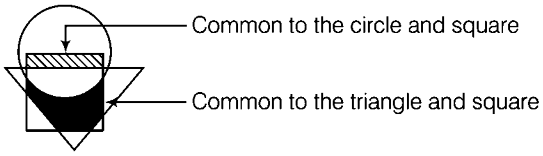
11. (*b*)


Common to the circle and square
Common to the triangle and circle

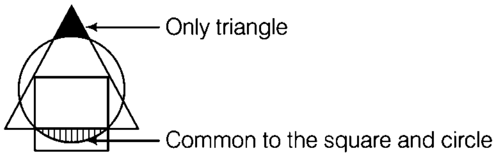
12. (*c*)


Only circle
Common to the circle and triangle

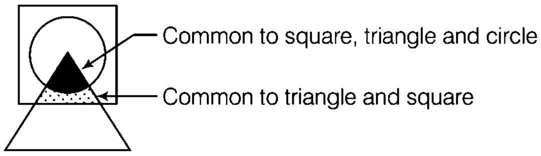
13. (*b*)


Common to the circle and square
Common to the triangle and square

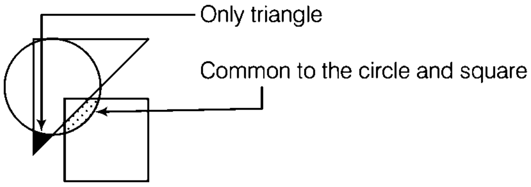
14. (*c*)


Only triangle
Common to the square and circle

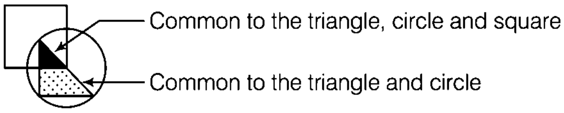
15. (*a*)


Common to square, triangle and circle
Common to triangle and square

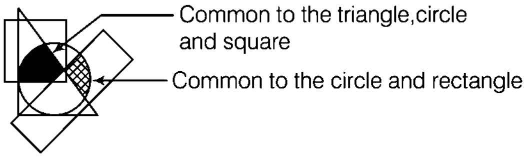
16. (*a*)


Only triangle
Common to the circle and square

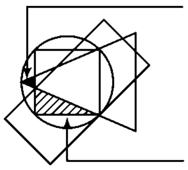
17. (*a*)


Common to the triangle, circle and square
Common to the triangle and circle

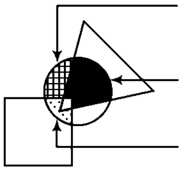
18. (*d*)


Common to the triangle,circle
and square
Common to the circle and rectangle

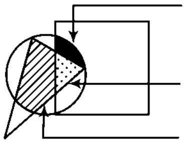
19. (*b*)


Common to the circle and triangle
Common to the square, circle and rectangle

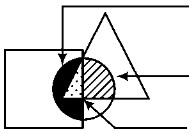
20. (*c*)


Only circle
Common to the circle and triangle
Common to the circle and square

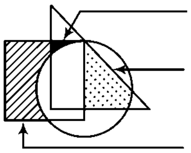
21. (*b*)


Common to the circle and square
Common to the circle, triangle and square
Common to the circle and triangle

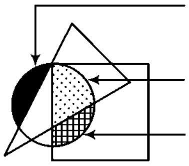
22. (*d*)


Common to the circle and square
Common to the circle and triangle
Common to the circle, square and triangle

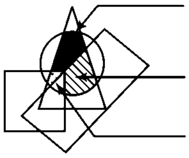
23. (*c*)


Common to the triangle and square
Common to the triangle and circle
Only square

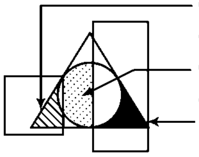
24. (*a*)


Only circle
Common to the triangle, circle and square
Common to the circle and square

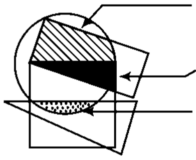
25. (*c*)


Common to the triangle and circle
Common to the triangle, circle and rectangle
Common to the square, circle and triangle

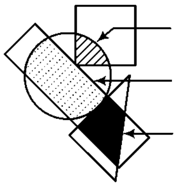
26. (*a*)


Common to the triangle and square
Common to the triangle and circle
Common to the triangle and rectangle

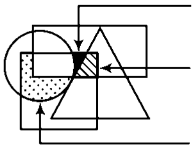
27. (*d*)


Common to the circle and rectangle
Common to the circle, square and rectangle
Common to the circle, square and triangle

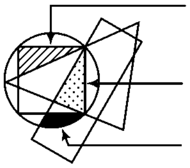
28. (*d*)


Common to the square and circle
Common to the circle and rectangle
Common to the triangle and rectangle

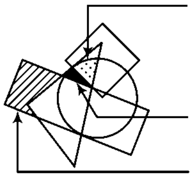
29. (*a*)


Common to the square and rectangle
Common to the square, triangle and rectangle
Common to the circle and square

30. (*d*)


Common to the square and circle
Common to the circle, rectangle, square and triangle
Common to the circle and rectangle

31. (*b*)


Common to the circle, square and triangle
Common to the circle and triangle
Only rectangle

32. (*e*) Because one dot appears in the triangle and one circle and the other dot appears in the triangle and three circles.

33. (*e*) The dot appears in two circles and the square.

34. (*c*) One dot appears in one triangle and the other dot appears in two triangles.

35. (*b*) The given figure has three circles of different sizes, one triangle, one dot out on its own, one dot in the larger circle only and the other dot in the middle sized circle and triangle.

36. (*d*) The dot appears in the square and two circles.

37. (*d*) The dot appears in a circle with three secants (lines) passing through it.

38. (*b*) It contains one dot in one circle, one dot in two circles and one dot in three circles.

39. (*e*) The dot is to be placed in circle and triangle only.

15

Grouping of Figures

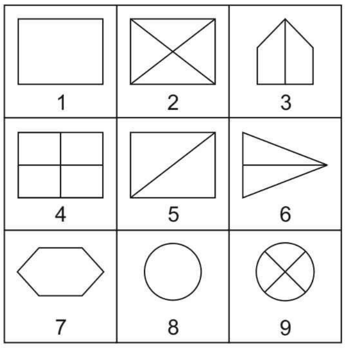
Grouping of figures involves segregating a given set of figures into different groups on the basis of some common characteristics.

In this type of questions, we are given a set of figures or geometrical shapes. We are required to analyse these figures and classify them into different groups based on one or more common characteristics, that the figures share with each other. Grouping of figures can be done on the basis of their shape, orientation, count of the number of elements and other such characteristics.

The following examples will help you become familiar with the type of questions asked

Directions (Example Nos. 1-3) In the following questions, group the figures into different classes on the basis of their orientation, shape etc.

***Ex* 1**

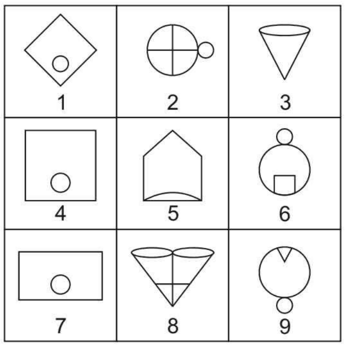


(a) (1, 2, 4), (3, 5, 6), (7, 8, 9)
(b) (1, 7, 8), (3, 5, 6), (2, 4, 9)
(c) (1, 3, 4), (2, 8, 9), (5, 6, 7)
(d) (1, 7, 8), (2, 3, 6), (4, 5, 9)

Sol. (*b*) Clearly, 1, 7 and 8 contain a simple geometrical shape. 2, 4 and 9 contain two straight lines dividing the main figure into four parts. 3, 5 and 6 contain one geometrical shape divided into two equal parts by a straight line.

Thus, the given nine figures may be divided into three groups as (1,7,8), (3,5,6) and (2,4,9).

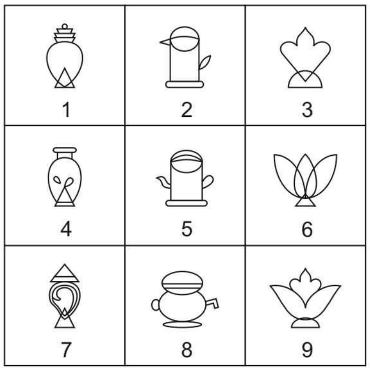
***Ex* 2**



(a) (1, 2, 4), (3, 5, 6), (8, 7, 9)
(b) (9, 7, 6), (5, 3, 1), (4, 8, 2)
(c) (2, 3, 4), (7, 6, 5), (9, 8, 1)
(d) (1, 4, 7), (2, 6, 9), (3, 5, 8)

Sol. (*d*) Clearly, 1, 4 and 7 comprise of a quadrilateral in which a circle is enclosed. 2, 6 and 9 contain one smaller circle attached to a larger circle. 3, 5 and 8 contain figure in which atleast one curve is present. Thus, the given nine figures may be divided into three groups as (1, 4, 7), (2, 6, 9) and (3, 5, 8).

***Ex* 3**



[SSC (CGL) 2004]

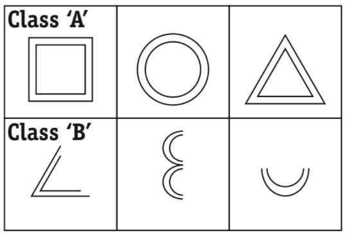
(a) (1, 4, 7), (2, 5, 8), (3, 6, 9)
(b) (1, 4, 5), (2, 6, 8), (3, 7, 9)
(c) (1, 7, 9), (3, 6, 8), (2, 4, 6)
(d) (1, 6, 9), (2, 5, 8), (3, 4, 7)

Sol. (*a*) 1, 4 and 7 form a group of figures in which one triangle is present at the base of figure and the figure as a whole looks like a flask.

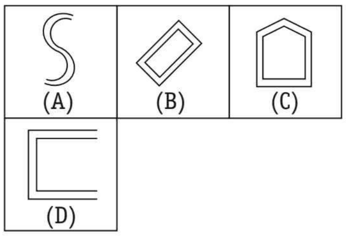
2, 5 and 8 are kettle shaped figures.

3, 6 and 9 form a group of figures representing floral design.

***Ex* 4** Which of the following answer figures are similar to class 'A' figures?



Answer Figures



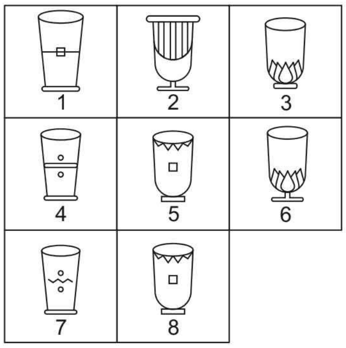
[SSC (CGL) 2004]

(a) A and C
(b) A and B
(c) B and D
(d) B and C

Sol. (*d*) Each of the three class 'A' figures is composed of two similar and closed geometrical shapes.

Hence, answer figures 'B' and 'C' belong to class 'A'.

***Ex* 5** Which of the following figures are similar?



[SSC (CGL) 2005]

(a) 1-5
(b) 3-6
(c) 5-8
(d) 4-7

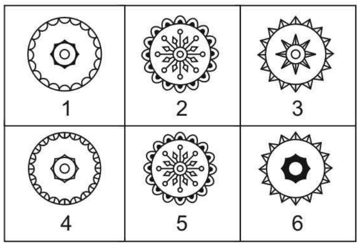
Sol. (*c*) Clearly, figures 5 and 8 are similar. So, correct option is (c).

Master Exercise

Take a Leap...

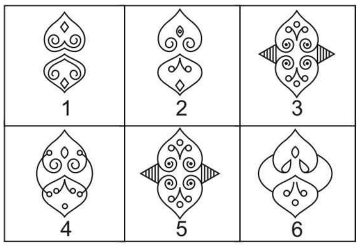
Directions (Q. Nos. 1-35) In each of the following questions, group the given figures into different classes on the basis of their orientation, shape etc.

1.



(a) (3, 6) (b) (1, 4) (c) (2, 4) (d) (2, 5)

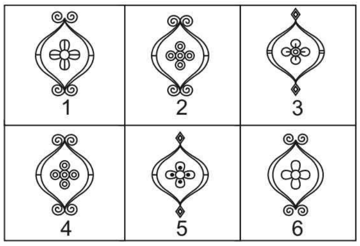
2.



[SSC (CGL) 2004]

(a) (1, 3) (b) (3, 4) (c) (3, 5) (d) (4, 6)

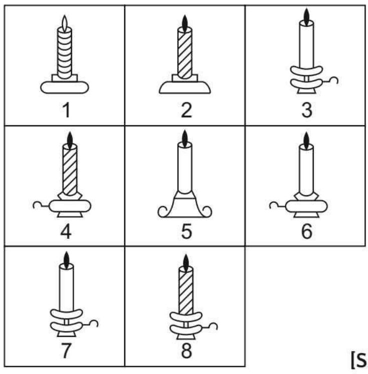
3.



[SSC (CGL) 2004]

(a) (1, 3) (b) (4, 6) (c) (2, 4) (d) (3, 5)

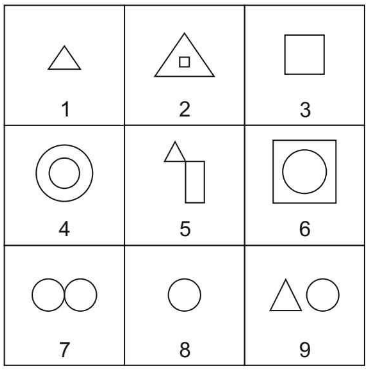
4.



[SSC (LDC & CGL) 2005]

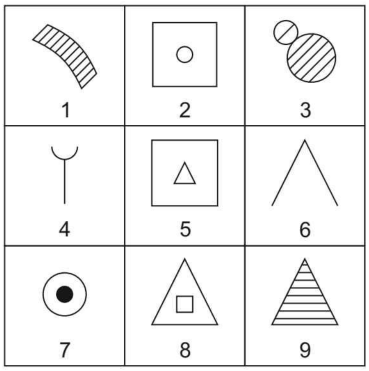
(a) (6, 7) (b) (3, 6) (c) (3, 7) (d) (4, 8)

5.



(a) (9, 7, 3) (b) (4, 3, 2)
(c) (1, 3, 8) (d) (7, 1, 3)

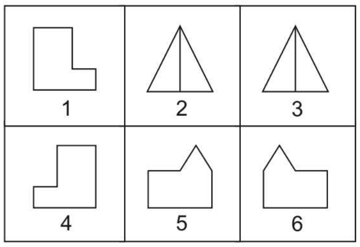
6.



[SSC (10+2) 2010]

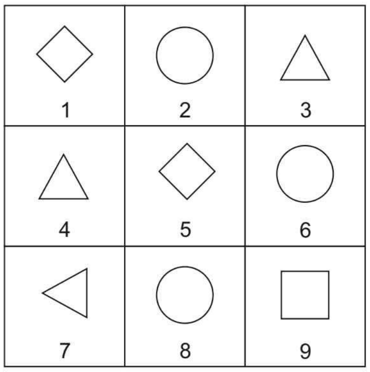
(a) (1, 2, 3) (b) (4, 5, 6)
(c) (2, 5, 8) (d) (7, 8, 9)

7.



(a) (1, 4), (2, 3), (5, 6)
(b) (1, 5), (2, 6), (4, 3)
(c) (1, 6), (2, 3), (4, 5)
(d) (1, 2), (3, 6), (4, 5)

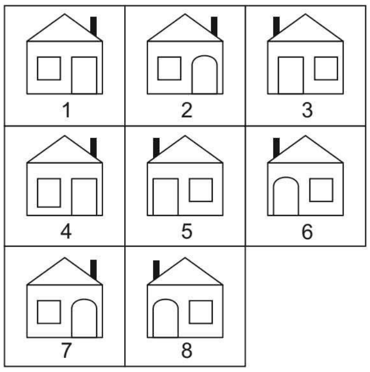
8.



[SSC (CPO) 2010]

(a) (1, 5, 9), (2, 4, 7), (3, 6, 8)
(b) (2, 6, 8), (1, 5, 9), (3, 4, 7)
(c) (4, 3, 7), (2, 6, 9), (1, 5, 8)
(d) (1, 2, 3), (4, 5, 6), (7, 8, 9)

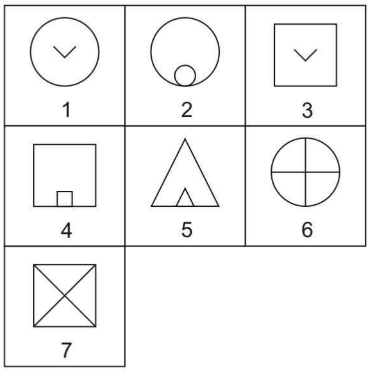
9.



[SSC (CPO) 2011]

(a) (1, 7), (2, 4), (3, 5), (6, 8)
(b) (1, 4), (2, 7), (3, 5), (6, 8)
(c) (1, 3), ,(2, 7), (6, 8), (4, 5)
(d) (1, 4), (3, 6), (3, 5), (7, 8)

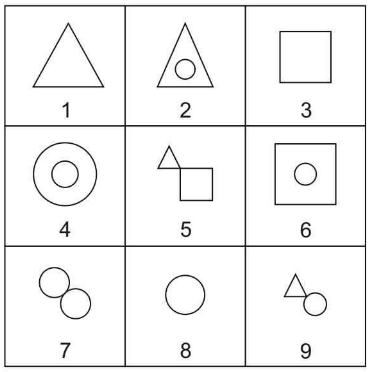
10.



[SSC (LDC) 2009]

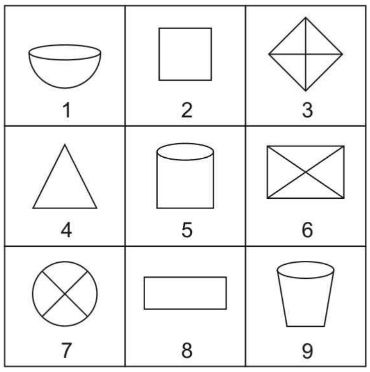
(a) (1, 2, 6), (3, 4, 7), (5)
(b) (1, 3), (2, 6), (4, 5, 7)
(c) (1, 2, 6, 7), (3), (4, 5)
(d) (1, 3), (2, 4, 5), (6, 7)

11.



(a) (4, 7, 9), (2, 5, 8), (1, 3, 6)
(b) (1, 3, 8), (2, 4, 6), (5, 7, 9)
(c) (1, 4, 6), (2, 3, 7), (5, 8, 9)
(d) (3, 5, 4), (1, 6, 9), (2, 7, 8)

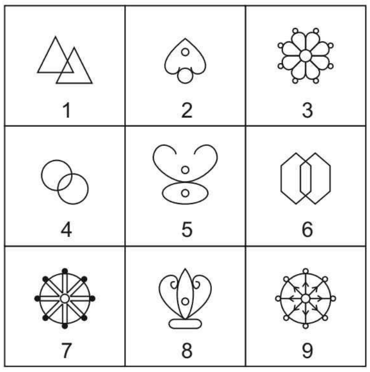
12.



[UP B. Ed. 2008]

(a) (1, 5, 9), (3, 6, 7), (2, 4, 8)
(b) (2, 3, 6), (4, 8, 9), (1, 5, 7)
(c) (3, 6, 8), (2, 4, 9), (1, 5, 7)
(d) (2, 5, 8), (1, 7, 9), (3, 4, 6)

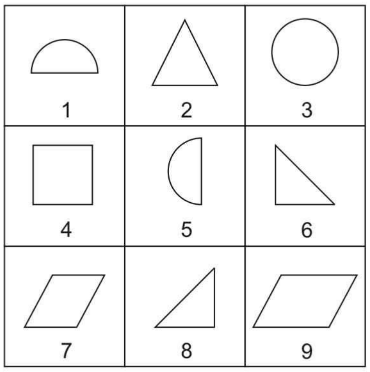
13.



[LIC (ADO) 2009]

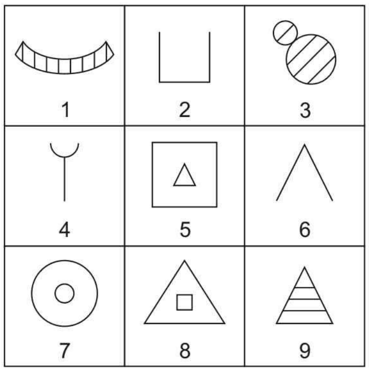
(a) (1, 4, 8), (2, 5, 7), (3, 9, 6)
(b) (1, 4, 6), (2, 5, 8), (3, 7, 9)
(c) (1, 4, 6), (2, 5, 7), (3, 8, 9)
(d) (1, 2, 3), (4, 5, 6), (7, 8, 9)
(e) None of these

14.



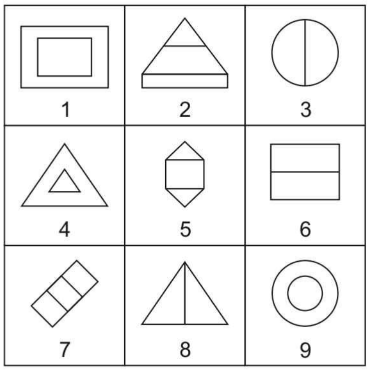
(a) (1, 3, 5), (2, 6, 9), (4, 7, 8)
(b) (2, 3, 4), (5, 6, 8), (9, 1, 7)
(c) (1, 3, 5), (2, 6, 8), (4, 7, 9)
(d) (3, 2, 4), (6, 5, 8), (7, 9, 1)

15.



(a) (1, 3, 9), (2, 4, 6), (5, 7, 8)
(b) (3, 2, 1), (4, 6, 5), (9, 7, 8)
(c) (2, 4, 5), (9, 1, 3), (7, 8, 6)
(d) (1, 5, 7), (2, 3, 9), (4, 6, 8)

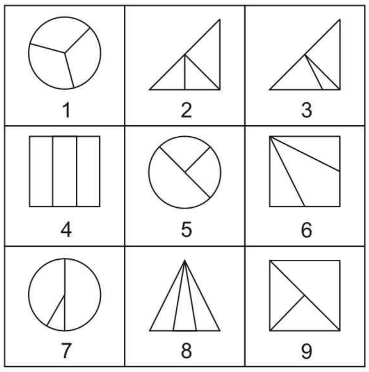
16.



[SSC (LDC) 2006]

(a) (1, 3, 8), (2, 4, 6), (5, 7, 9)
(b) (1, 4, 9), (3, 6, 8), (2, 5, 7)
(c) (3, 4, 7), (9, 8, 7), (4, 3, 1)
(d) (2, 3, 6), (9, 3, 4), (6, 3, 2)

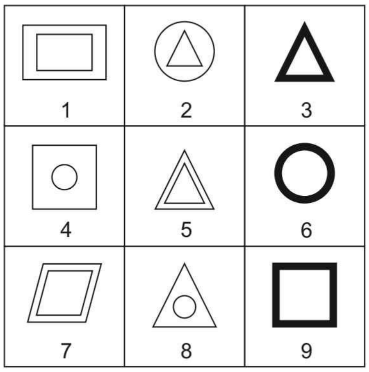
17.



[MAT 2007]

(a) (1, 5, 7), (2, 3, 8), (4, 6, 9)
(b) (3, 7, 6), (1, 8, 4), (2, 5, 9)
(c) (1, 4, 9), (2, 5, 6), (3, 7, 8)
(d) (1, 2, 6), (3, 4, 5), (7, 8, 9)

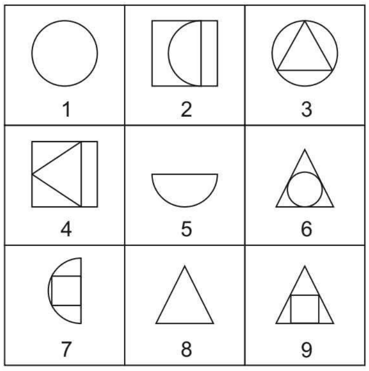
18.



[SSC (CGL) 2004]

(a) (1, 5, 7), (2, 4, 6), (3, 9, 8)
(b) (1, 5, 7), (2, 4, 8), (3, 6, 9)
(c) (1, 5, 7), (4, 8, 9), (2, 3, 6)
(d) (1, 5, 7), (3, 8, 9), (2, 4, 6)

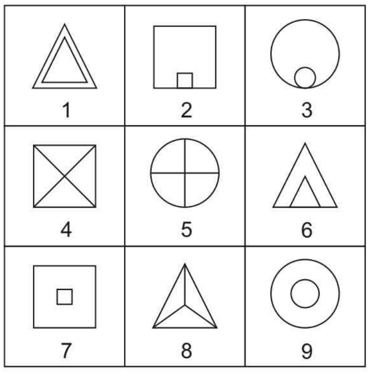
19.



[SSC (LDC) 2009]

(a) (1, 5, 8), (3, 4, 7), (2, 6, 9)
(b) (1, 3, 6), (4, 5, 9), (2, 7, 8)
(c) (1, 3, 6), (2, 5, 7), (4, 8, 9)
(d) (6, 7, 8), (1, 3, 7), (2, 4, 9)

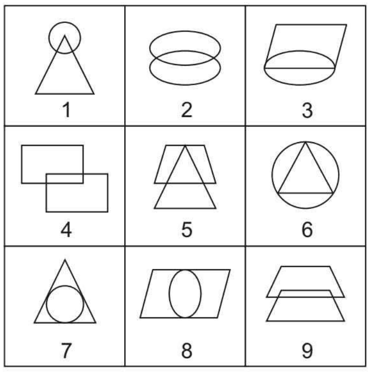
20.



[SSC (CPO) 2006]

(a) (1, 7, 9), (2, 3, 6), (4, 5, 8)
(b) (1, 2, 9), (3, 4, 6), (5, 7, 8)
(c) (1, 6, 8), (2, 4, 7), (3, 5, 9)
(d) (1, 7, 8), (2, 9, 3), (6, 4, 5)

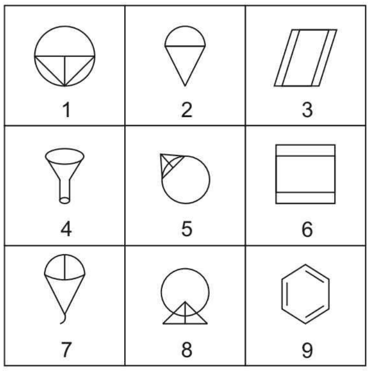
21.



[SSC (LDC) 2008]

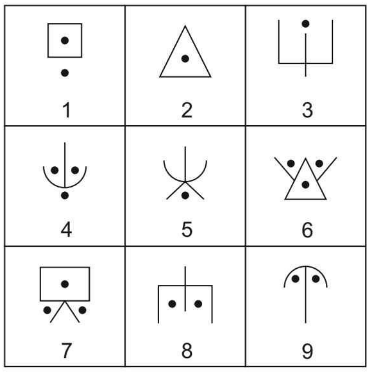
(a) (1, 5, 9), (2, 7, 8), (3, 4, 6)
(b) (2, 4, 9), (6, 7, 8), (1, 3, 5)
(c) (1, 5, 6), (4, 7, 8), (2, 3, 9)
(d) (3, 7, 8), (4, 5, 9), (1, 2, 6)

22.



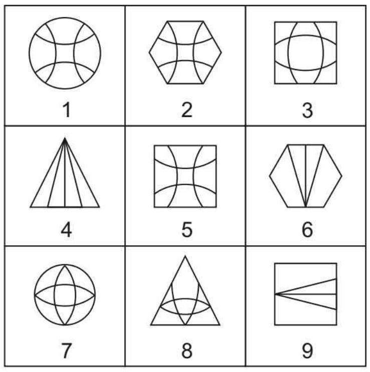
(a) (1, 5, 8), (2, 6, 7), (3, 4, 9)
(b) (1, 4, 9), (2, 3, 8), (5, 6, 7)
(c) (1, 7, 8), (2, 6, 9), (3, 4, 5)
(d) (1, 5, 8), (2, 4, 7), (3, 6, 9)

23.



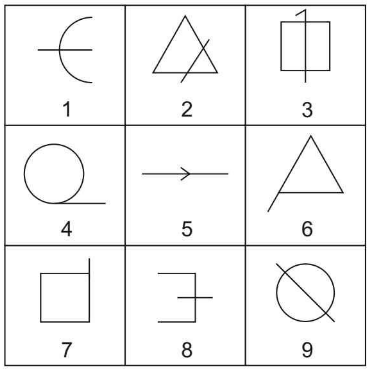
(a) (1, 7, 8), (2, 5, 6), (3, 4, 9)
(b) (1, 8, 9), (2, 3, 5), (4, 6, 7)
(c) (2, 3, 5), (1, 7, 8), (4, 6, 9)
(d) (2, 6, 7), (1, 3, 4), (5, 8, 9)

24.



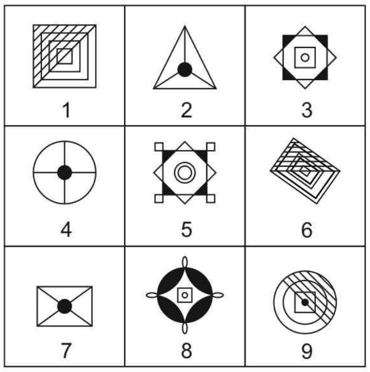
(a) (1, 2, 5), (3, 7, 8), (4, 6, 9)
(b) (1, 2, 7), (3, 6, 9), (4, 5, 8)
(c) (2, 3, 8), (4, 6, 9), (1, 5, 7)
(d) (5, 6, 9), (1, 3, 4), (2, 7, 8)

25.



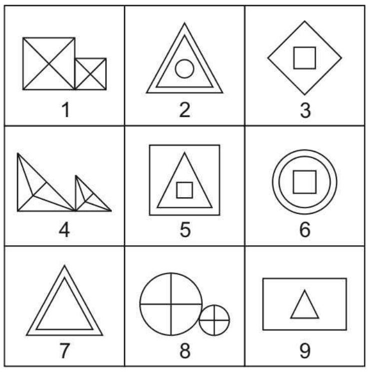
(a) (1, 5, 8), (2, 3, 9), (4, 6, 7)
(b) (4, 8, 9), (1, 2, 5), (3, 6, 7)
(c) (2, 5, 9), (1, 3, 8), (2, 6, 7)
(d) (1, 8, 9), (4, 6, 7), (2, 3, 5)

26.



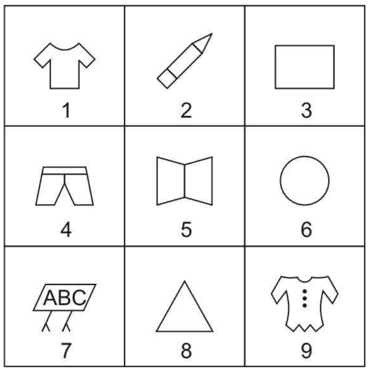
(a) (1, 6, 9), (2, 5, 7), (4, 8, 3)
(b) (1, 6, 9), (2, 4, 8), (3, 5, 7)
(c) (1, 3, 5), (2, 6, 7), (4, 8, 9)
(d) (1, 6, 9), (2, 4, 7), (3, 5, 8)

27.



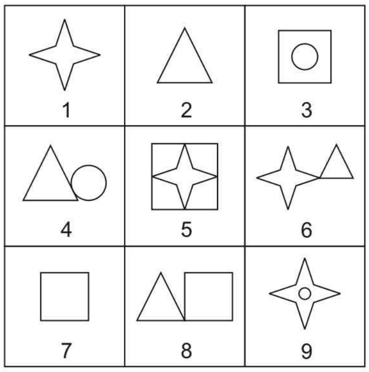
(a) (1, 3, 7), (2, 4, 6), (5, 8, 9)
(b) (1, 4, 6), (2, 5, 7), (3, 8, 9)
(c) (1, 4, 8), (2, 5, 6), (3, 7, 9)
(d) (1, 4, 8), (2, 7, 9), (3, 5, 6)

28.


1
2
3
4
5
6
ABC
7
8
9

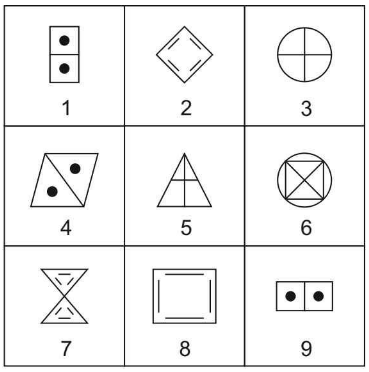
(a) (1, 4, 9), (2, 5, 7), (3, 6, 8)
(b) (2, 3, 8), (4, 5, 7), (1, 6, 9)
(c) (5, 7, 9), (3, 4, 8), (2, 6, 1)
(d) (1, 4, 9), (2, 3, 5), (6, 7, 8)

29.



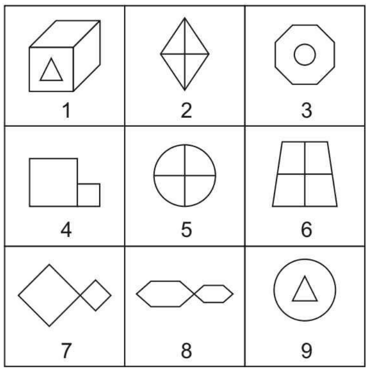
(a) (3, 4, 9), (5, 7, 8), (1, 2, 6)
(b) (1, 5, 6), (2, 4, 8), (3, 7, 9)
(c) (4, 6, 8), (3, 5, 7), (1, 2, 9)
(d) (1, 2, 7), (3, 5, 9), (4, 6, 8)

30.



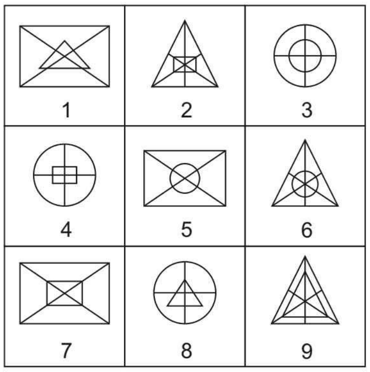
(a) (1, 4, 9), (2, 6, 8), (3, 5, 7)
(b) (1, 2, 8), (3, 5, 7), (4, 6, 9)
(c) (2, 5, 8), (4, 6, 9), (1, 3, 7)
(d) (1, 4, 9), (2, 7, 8), (3, 5, 6)

31.



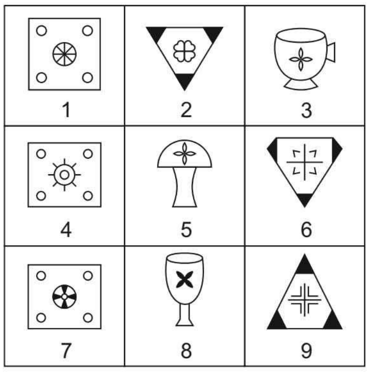
(a) (1, 3, 9), (2, 5, 6), (4, 7, 8)
(b) (1, 3, 9), (2, 7, 8), (4, 5, 6)
(c) (1, 2, 4), (3, 5, 7), (6, 8, 9)
(d) (1, 3, 6), (2, 4, 8), (5, 7, 9)

32.



(a) (2, 4, 7), (1, 8, 9), (3, 5, 6)
(b) (2, 6, 9), (1, 5, 7), (3, 4, 8)
(c) (2, 6, 7), (1, 5, 8), (3, 4, 9)
(d) (2, 7, 8), (1, 5, 6), (3, 4, 9)

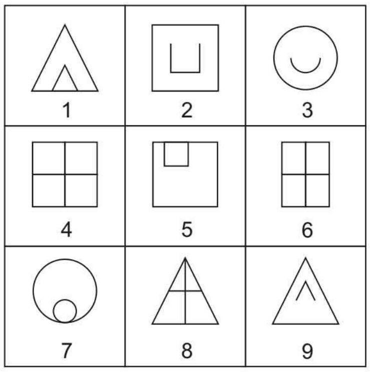
33.



[SSC (CPO) 2007]

(a) (1, 4, 7), (3, 6, 9), (2, 5, 8)
(b) (1, 4, 7), (2, 6, 9), (3, 5, 8)
(c) (1, 6, 9), (2, 4, 7), (3, 5, 8)
(d) (1, 5, 7), (2, 6, 9), (3, 4, 8)

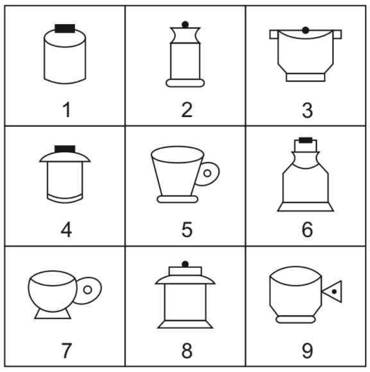
34.



[SSC (CGL) 2008]

(a) (1, 5, 7), (2, 3, 9), (4, 6, 8)
(b) (1, 3, 9), (2, 4, 6), (5, 7, 8)
(c) (3, 4, 7), (2, 4, 9), (1, 6, 8)
(d) (6, 7, 9), (1, 3, 4), (2, 4, 8)

35.



[SSC (LDC) 2009]

(a) (1, 4, 6), (2, 3, 8), (5, 7, 9)
(b) (2, 3, 8), (4, 5, 7), (1, 6, 9)
(c) (5, 7, 9), (3, 4, 8), (1, 6, 2)
(d) (1, 4, 9), (2, 3, 5), (6, 7, 8)

Response & Interpretations (Master Exercise)

1. (*d*) 2 and 5 form a pair of identical figures.

2. (*c*) 3 and 5 form a pair of identical figures.

3. (*c*) 2 and 4 form a pair of identical figures.

4. (*c*) 3 and 7 form a pair of identical figures.

5. (*c*) 1, 3 and 8 form a group of figures which contain one geometrical shape.

6. (*c*) 2, 5 and 8 form a group of figures which are composed of two dissimilar figures, one inside the other.

7. (*a*) (1, 4), (2, 3) and (5, 6) are a group of similar shape figures.

8. (*b*) (2, 6, 8), (1, 5, 9) and (3, 4, 7) are a group of similar shape figures.

9. (*b*) (1, 4), (2, 7), (3, 5) and (6, 8) are group of identical figures.

10. (*d*) 1 and 3 contain a V-shaped figure inside another figure.

2, 4 and 5 contain one figure placed inside a similar figure.

6 and 7 are divided into four equal parts by mutually perpendicular lines.

11. (*b*) 1, 3 and 8 form a group of figures which contain one geometrical figure.

2, 4 and 6 form a group of figures in which one figure is enclosed inside another figure.

5, 7 and 9 form a group of figures in which two figures are attached with one another.

12. (*a*) 1, 5 and 9 consist of cup-shaped figures.

3, 6 and 7 contain straight lines dividing the figure into four parts.

2, 4 and 8 are simple geometrical figures.

13. (*b*) 1, 4 and 6 contain two identical figures which intersect each other.

2, 5 and 8 contain figures in which curves are present. 3, 7 and 9 contain figures which represent circular design patterns.

14. (*c*) 1, 3 and 5 are figures having partially or completely curved boundaries.

2, 6 and 8 are triangles.

4, 7 and 9 are quadrilaterals.

15. (*a*) 1, 3 and 9 form a group of figures containing parallel lines. 2, 4 and 6 are simple figures.

5, 7 and 8 form a group of figures in which two figures are present, one inside the other.

16. (*b*) 1, 4 and 9 form a group of figures in which two similar figures are present, one inside the other.

3, 6 and 8 form a group of figures in which a straight line divides the figure into two equal parts.

2, 5 and 7 form a group of figures in which two straight lines divide the figure into three parts.

17. (*b*) 3, 7 and 6 form a group of figures which are divided into three unequal parts.

1, 8 and 4 form a group of figures which are divided into three equal parts.

2, 5 and 9 form a group of figures in which the figures are divided into three parts in such a way that one part is half and the other two parts are one-fourth of the original figure.

18. (*b*) 1, 5 and 7 are composed of two similar figures, one inside the other.

2, 4 and 8 contain a figure placed inside a different figure. 3, 6 and 9 are figures with thick boundaries.

19. (*c*) 1, 3 and 6 contain one complete circle each.

2, 5 and 7 contain a semi-circle each.

4, 8 and 9 contain a triangle each.

20. (*a*) 1, 7 and 9 contain two similar figures, one inside the other but not touching each other.

2, 3 and 6 contain two similar figures one inside the other and both touching each other.

4, 5 and 8 are divided into equal parts by straight lines emerging from the centre.

21. (*b*) 2, 4 and 9 are composed of two similar figures intersecting each other.

6, 7 and 8 contain one figure enclosed inside the other.

1, 3 and 5 are composed of two dissimilar figures intersecting each other.

22. (*d*) 1, 5 and 8 form a group of figures in which a circle and a triangle (divided into two equal parts) are present in contact with each other.

2, 4 and 7 contain figures which have curved portions.

3, 6 and 9 form a group of figures formed by straight lines only.

23. (*b*) 1, 8 and 9 form a group of figures in which two shaded circles are present.

2, 3 and 5 form a group of figures in which one shaded circle is present.

4, 6 and 7 form a group of figures in which three shaded circles are present.

24. (*a*) 1, 2 and 5 contain similar pattern enclosed inside different figures.

3, 7 and 8 contain similar pattern (different from that in 1, 2 and 5) enclosed inside different figures.

4, 6 and 9 are figures enclosing a triangle with one median.

25. (*a*) 1, 5 and 8 are open figures bisected by a straight line.

4, 6 and 7 are figures having an extended arm.

2, 3 and 9 are closed figures intersected by a line.

26. (*d*) 1, 6 and 9 form a group of figures in which half of the figure contains parallel straight lines.

2, 4 and 7 form a group of figures which are divided into equal parts and a dark circle is present at their centre.

3, 5 and 8 form a group of figures in which similar design pattern is followed.

27. (*c*) 1, 4 and 8 contain similar figures both divided into four parts and attached to each other.

2, 5 and 6 contain three figures (two of which are similar) placed one inside the other.

3, 7 and 9 contain one figure inside the other which may or may not be similar.

28. (*a*) 1, 4 and 9 form a group of clothes.

2, 5 and 7 form a group of study materials.

3, 6 and 8 are similar geometrical shapes.

29. (*d*) 1, 2 and 7 are single figures.

3, 5 and 9 contain two dissimilar figures one inside the other.

4, 6 and 8 contain two different figures touching each other.

30. (*d*) 1, 4 and 9 form a group of figures which are divided into two equal parts and each part contains one small dark circle.

2, 7 and 8 form a group of figures in which lines equal to the number of lines present in the main figure are present inside the figure (one line parallel to each line).

3, 5 and 6 form a group of figures in which two straight lines mutually perpendicular to each other are present.

31. (*a*) 1, 3 and 9 contain one figure inside a different figure.

2, 5 and 6 are divided into four parts by mutually perpendicular lines.

4, 7 and 8 contain similar figures attached to each other.

32. (*b*) 2, 6 and 9 contain triangles, each enclosing another figure and three medians.

1, 5 and 7 contain rectangles, each enclosing another figure and two diagonals.

3, 4 and 8 contain circles, each enclosing another figure and two diameters.

33. (*b*) 1, 4 and 7 form a group of figures containing a square in which one smaller circle is present at each corner and one larger circle is present at centre.

2, 6 and 9 form a group of figures which contain three shaded triangles at the corners and four similar designs at the centre of the figure.

3, 5 and 8 form a group of figures in which the curved portion of the figure contains certain design.

34. (*a*) 1, 5 and 7 contain two similar figures, one inside the other.

2, 3 and 9 form a group of figures in which half portion of the figure is enclosed inside that figure.

4, 6 and 8 contain two straight lines perpendicular to each other dividing the figure into four parts.

35. (*a*) 1, 4 and 6 form a group of figures in which one shaded rectangle is present at the top of the figure.

2, 3 and 8 form a group of figures in which one shaded circle is present at the top of the figure.

5, 7 and 9 represent cup shaped figures.

16

Figure Matrix

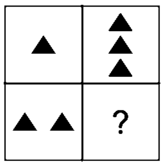
Representation of figures/elements following a certain rule or pattern, either rowwise or columnwise in a matrix form is known as Figure Matrix.

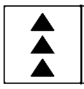
Questions based on 'Figure Matrix' generally have either a 2 × 2 or a 3 × 3 matrix. Each cell of this matrix contains a figure and there is a common pattern running through each of the rows or columns. A candidate is required to analyse each of the sets to find out the common pattern and then identify the missing figure from the set of given alternatives, so as to complete the given matrix. The common pattern can be on the basis of number of elements, orientation of figure, addition or removal of elements etc.

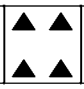
For clear understanding of this chapter, few examples are given below

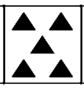
Directions (Example Nos. 1-6) In each of the following questions, find out the answer figure which completes the problem figure matrix.

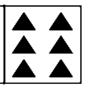
***Ex* 1** **Problem Figures** **Answer Figures**




(a)

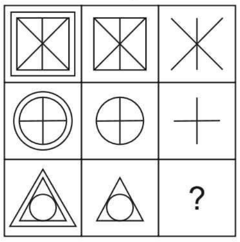

(b)

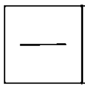

(c)

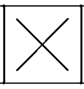

(d)

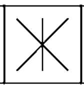
Sol. (*d*) The second part of each row is thrice the first part. So, the figure given in option (d) will replace the question mark.

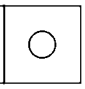
***Ex* 2** **Problem Figures** **Answer Figures**




(a)

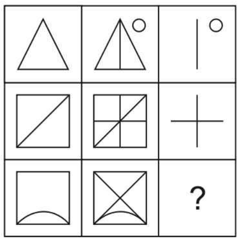

(b)

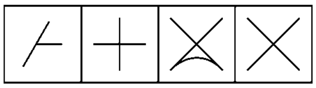

(c)


(d)

Sol. (*d*) In each row, the second figure is obtained by removing the outer most element of the first figure and the third figure is obtained by removing the outer most element of the second figure.

Ex **3** **Problem Figures** **Answer Figures**



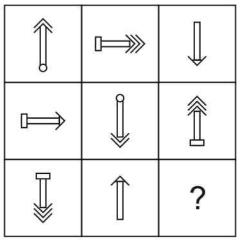


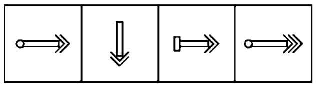
(a) (b) (c) (d)

[CMAT 2013]

Sol. (*d*) The third figure in each row comprises of parts which are not common to the first two figures.

Ex **4** **Problem Figures** **Answer Figures**



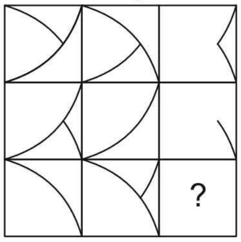


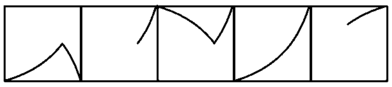
(a) (b) (c) (d)

[RRB (TC/CC) 2008]

Sol. (*a*) There are types of arrows—a single-headed arrow, a double-headed arrow and a triple-headed arrow. There are three positions of arrows—upwards, downwards and towards right. The arrows have 3 types of bases-plane, rectangular and circular. Each of these features is used once in each row.

Ex **5** **Problem Figures** **Answer Figures**

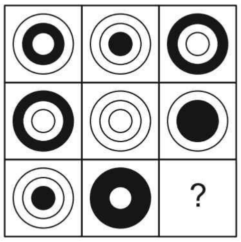


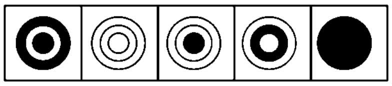


(a) (b) (c) (d) (e)

Sol. (*b*) The contents of the third figure in each row (and column) are determined by the contents of the first two figures. Lines are carried forward from the first two figures to the third one, except where two lines appear in the same position, in which they are cancelled out.

Ex **6** **Problem Figures** **Answer Figures**





(a) (b) (c) (d) (e)

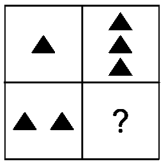
Sol. (*b*) In each row (and column), the superimposition of all the three figures results in a darkened circle.

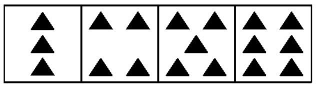
Master Exercise

Take a Leap...

Directions (Q. Nos. 1-36) In each of the following questions, find out the answer figure which completes the problem figure matrix.

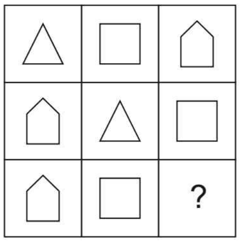
1. Problem Figure **Answer Figures**

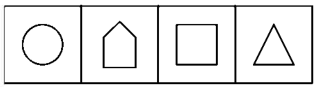



(a) (b) (c) (d)

[RRB (TC/CC) 2010]

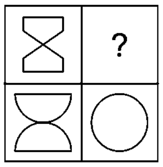
2.

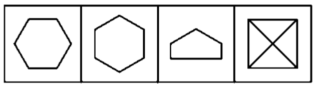



(a) (b) (c) (d)

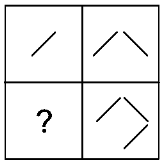
[UP Police (SI) 2009]

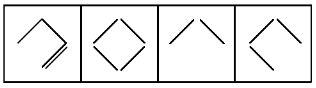
3.




(a) (b) (c) (d)

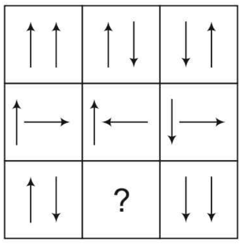
4.

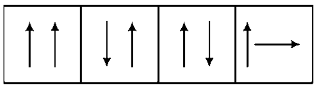



(a) (b) (c) (d)

[SSC (CGL) 2008]

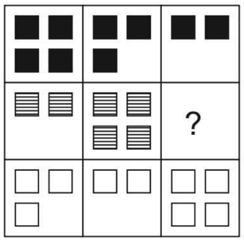
5. Problem Figure **Answer Figures**

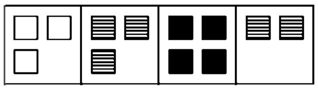



(a) (b) (c) (d)

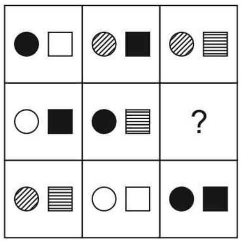
[CSAT 2014, UP B. Ed. 2008]

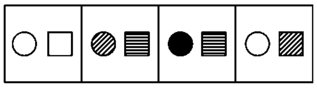
6.




(a) (b) (c) (d)

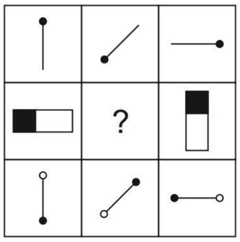
7.

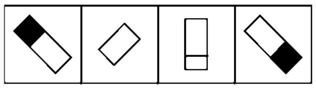



(a) (b) (c) (d)

[SSC (10+2) 2007]

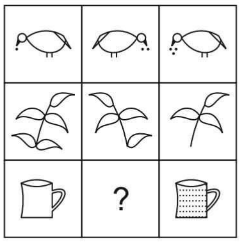
8. **Problem Figure** **Answer Figures**

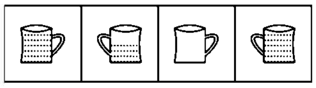




(a) (b) (c) (d)

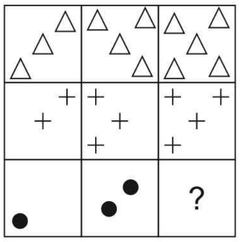
9.

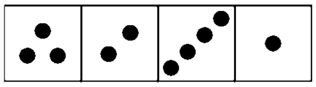




(a) (b) (c) (d)

10.

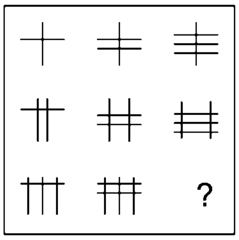


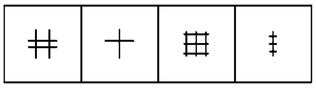


(a) (b) (c) (d)

[UP B.Ed. 2009]

11.

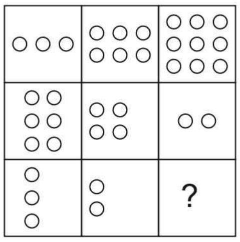


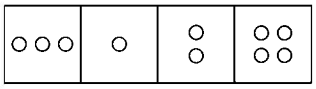


(a) (b) (c) (d)

[SSC (Multitasking) 2013)]

12.

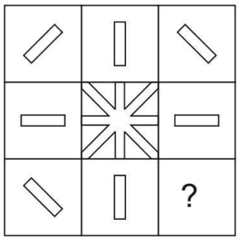


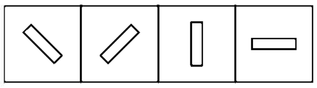


(a) (b) (c) (d)

[UP Police (Constable) 2008]

13. **Problem Figure** **Answer Figures**

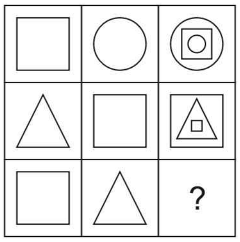


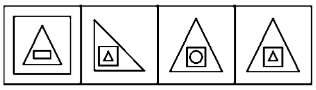


(a) (b) (c) (d)

[SSC (CGL) 2008]

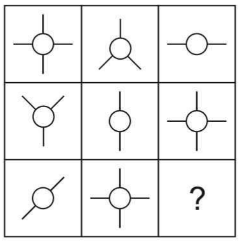
14.

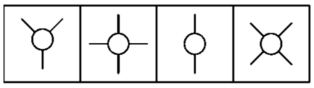




(a) (b) (c) (d)

15.

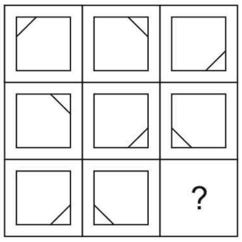


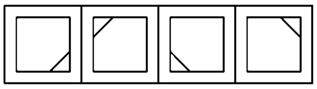


(a) (b) (c) (d)

[SSC (10+2) 2005]

16.

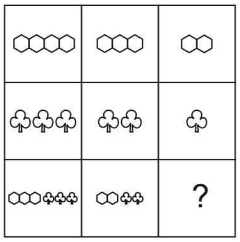


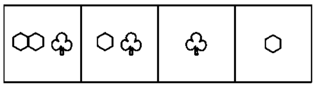


(a) (b) (c) (d)

[UP B. Ed. 2006]

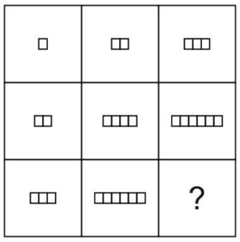
17.

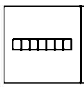


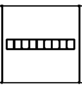


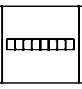
(a) (b) (c) (d)

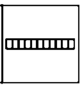
18. **Problem Figure** **Answer Figures**




(a)

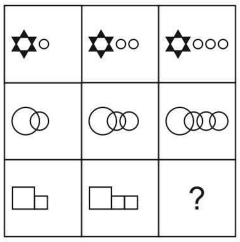

(b)

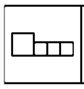

(c)

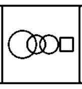

(d)

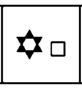
[UP Police (Constable) 2010]

19.




(a)


(b)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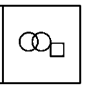
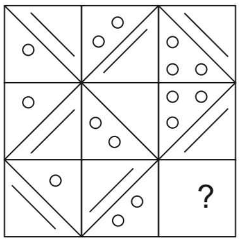
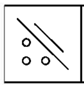
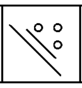

(d)

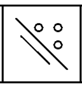
[UP B. Ed. 2007]

20.




(a)


(b)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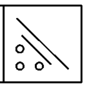
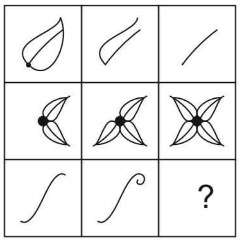
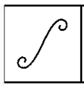
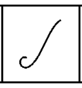

(d)

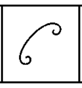
[SSC (Cabinet Secretariat) 2013, SSC (LDC & DEO) 2012]

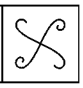
21.




(a)

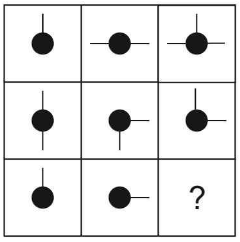

(b)

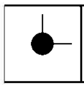

(c)

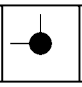

(d)

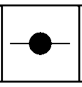
[UP Police (SI) 2007]

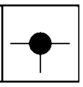
22.




(a)

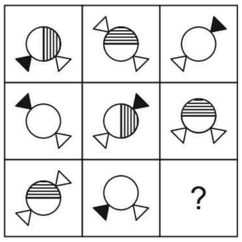

(b)

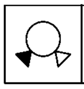

(c)

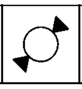

(d)

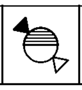
[UP B. Ed. 2007]

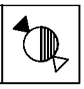
23. **Problem Figure** **Answer Figures**




(a)

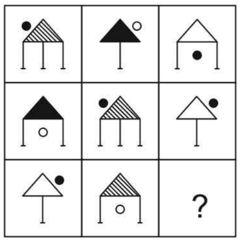

(b)

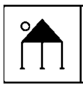

(c)


(d)

[UP B. Ed. 2004]

24.

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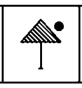
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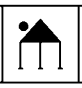
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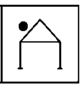
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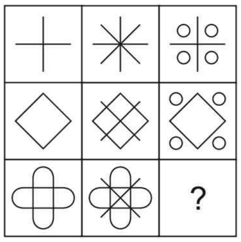

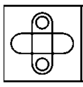
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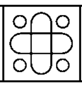
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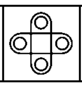
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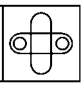
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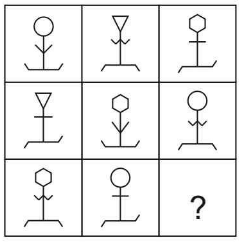
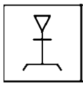
[UP Police (Constable) 2008]

26.

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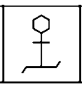
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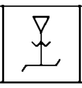
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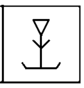
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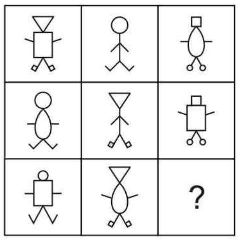
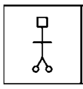
[UP Police (SI) 2009]

27.

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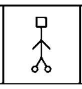
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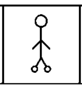
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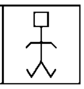
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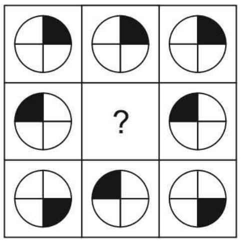
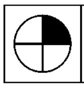
[SSC (CGL) 2009]

28. **Problem Figure** **Answer Figures**

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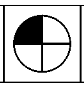
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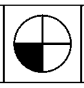
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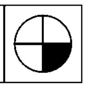
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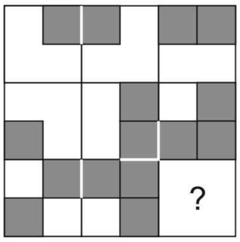
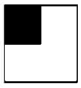
[UPSC (CSAT) 2012]

29.

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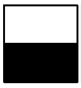
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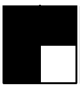
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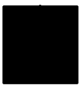
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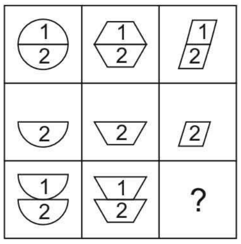
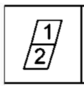
[RRB (TC/CC) 2008]

30.

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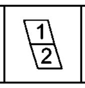
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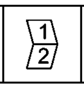
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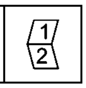
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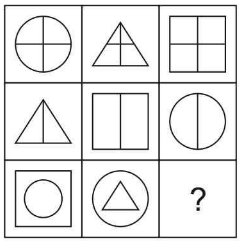
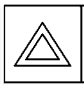
31.

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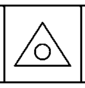
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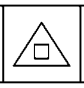
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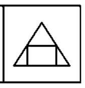
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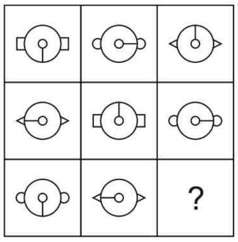
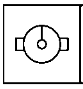
[RRB (TC/CC) 2010]

32.

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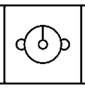
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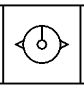
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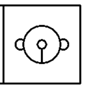
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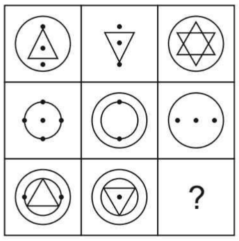
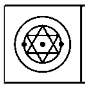
[RRB (TC/CC) 2009]

33. **Problem Figure** **Answer Figures**

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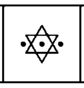
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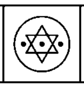
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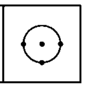
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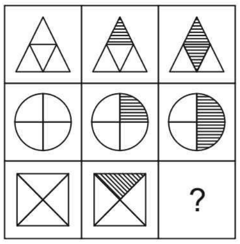
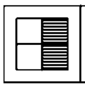
34.

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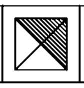
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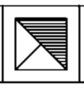
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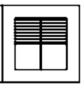
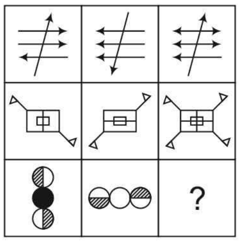
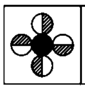

(d)

[UP B. Ed. 2005]

35.

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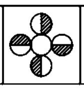
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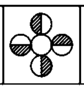
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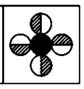
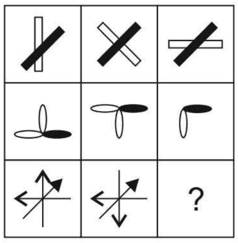
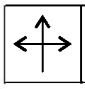

(d)

[MAT 2005]

36.

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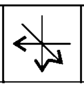
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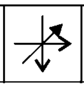
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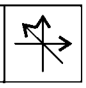
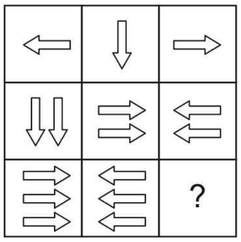
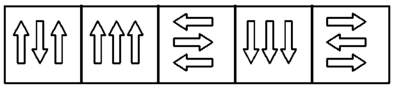

(d)

Directions (Q. Nos. 37-46) In each of the following questions, a problem figure matrix is given with one or more terms missing, followed by four/five answer figures. Find the correct answer figure that will replace?

37. Problem Figures

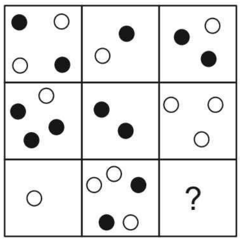


Answer Figures

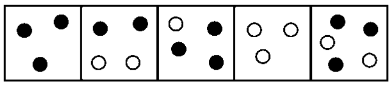


(a) (b) (c) (d) (e)

38. Problem Figures

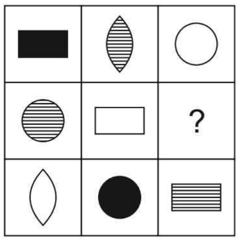


Answer Figures

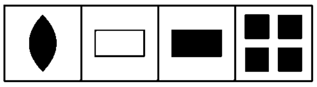


(a) (b) (c) (d) (e)

39. Problem Figures

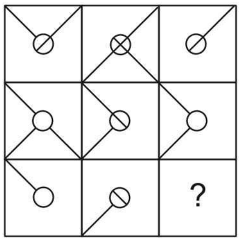


Answer Figures

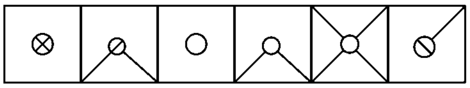


(a) (b) (c) (d)

40. Problem Figures

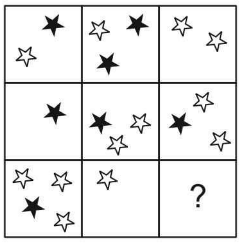


Answer Figures

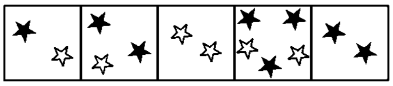


(a) (b) (c) (d) (e) (f)

41. Problem Figures

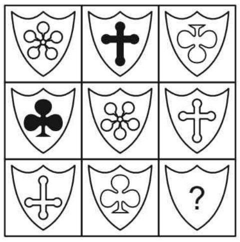


Answer Figures

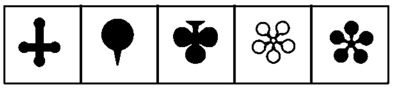


(a) (b) (c) (d) (e)

42. Problem Figures

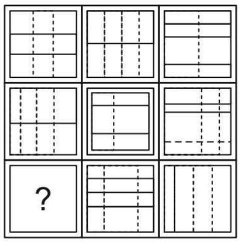


Answer Figures



(a) (b) (c) (d) (e)

43. Problem Figures



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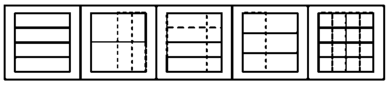
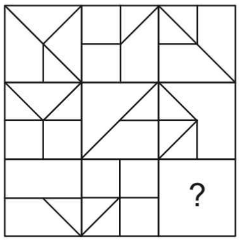
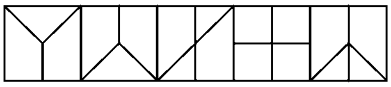


(a) (b) (c) (d) (e)

44. Problem Figures

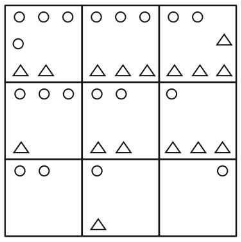


Answer Figures



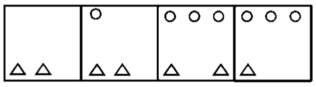
(a) (b) (c) (d) (e)

45. Problem Figures



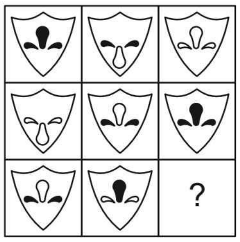
[CGL 2014]

Answer Figures

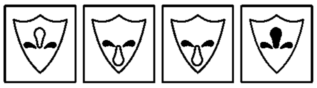


(a) (b) (c) (d)

46. Problem Figures



Answer Figures



(a) (b) (c) (d)

Response & Interpretations (Master Exercise)

1. (*d*) In each row, the number of dots in the second figure is thrice the number in the first figure.

2. (*d*) In each row, all the three shapes *i.e.,* triangle, square and pentagon are present.

3. (*b*) The second figure in each row is obtained by joining the lower part of first figure with its upper part.

4. (*b*) Starting with the top left figure, one line is increasing in clockwise direction. So, four lines will come in fourth part.

5. (*a*) Second figure in each row consists of first arrow of the first figure as such and the second one in an inverted form. The third figure is obtained by inverting the arrows of second figure.

6. (*b*) In each row, two, three and four similar squares are present.

7. (*a*) In each column, three figures with one circle and one square each are present in such a way that three different patterns of both the circle and square are present in all columns.

8. (*d*) As we move from left to right in each row, the figure rotates through an angle of 135° anti-clockwise at each step.

9. (*b*) In each row, from left to right, directions are changing and the quantities are either increasing or decreasing.

10. (*a*) The number of objects increases by 1 at each step from left to right in each row.

11. (*c*) Moving row wise the number of horizontal lines increases by one in each step.

12. (*b*) In each row from left to right the ratio of the number of circles is 1:2:3 or 3:2:1.

13. (*b*) The central figure of the matrix is formed by combining rest of the figures.

14. (*d*) In each row, third figure is obtained when in the second figure the first figure is placed and in the first figure again, second figure is placed reducing its size.

15. (*a*) Each row of the matrix contains one circle with two bars, one with three bars and one circle with four bars.

16. (*b*) The line inside the square moves from one corner to another, clockwise, as we move from left to right in a row.

17. (*b*) The number of each type of figures decreases by 1 at each step from left to right in each row.

18. (*b*) The increase in the number of squares follows the pattern +1 in first row, +2 in second row and +3 in third row.

19. (*a*) In each row, the number of smaller figures increases by one at each step from left to right.

20. (*c*) In each row the central lines moves 90° clockwise and small line and circle interchange their places. Also, the number of small circles increases by one in each step.

21. (*a*) The number of components in each row either increases or decreases from left to right. In the third row, it increases.

22. (*a*) The third figure in each row comprises of the lines which are not common to the first two figures.

23. (*d*) In each row, the circle is unshaded in one of the figures, it has its upper part shaded in another figure and its RHS part shaded in the third figure. There are three positions of the two triangles, each of which is used only once in a row. Also, two of the figures in each row have one triangle shaded.

24. (*c*) There are three types of triangular shadings, 3 types of legs, 3 positions of circles, each of which is used only once in a row. Also, in each row two circles are shaded.

25. (*b*) As we move from first to the second figure in a row, the figure gets intersected by two mutually perpendicular lines. In the next step, dots appear at the ends of these lines and the lines disappear to give the third figure.

26. (*d*) There are three types of faces, 3 types of hands and 3 types of legs. Each type is used once in each row.

27. (*b*) There are three types of faces, 3 types of body, 3 types of hands and 3 types of legs, each of which is used only once in a row.

28. (*d*) In first and third columns, the black portion of middle image is diagonally opposite to that of lower image. Hence, middle image in second column must be same as given in option (d).

29. (*d*) In each row, the third figure from the left has design which is a union of the designs of the two figures on its left.

30. (*c*) Each figure in third row comprises of figure marked as 1 of first row in inverted form and figure marked as 2 as it is.

31. (*c*) Clearly, triangle follows circle and square follows triangle.

32. (*a*) In the third row, the inner circle with the bar moves 90° clockwise at each step. Also, there are 3 types of side figures-triangle, circle and square, of which only square remains unused in the third row.

33. (*b*) The third figure in each row comprises of parts which are not common to the first two figures.

34. (*b*) The first figure in each row is completely unshaded. The second one has one-fourth part shaded and the third one is half shaded, where the direction of shading for the last two figures in each row remains the same.

35. (*d*) In each row, both the common and uncommon parts of first two figures combine together to obtain the third figure.

36. (*c*) In each row, the darkened part of each figure remains in the same direction while the remaining part of the figure rotates anti-clockwise.

37. (*d*) In each line across and down, the arrow point in each of three directions left, right and down. The number of arrows remains the same in each row.

38. (*a*) Each line across and down contains five black dots and four white dots.

39. (*a*) In each row, all the three shape elements *i.e.,* rectangle, circle and two joined arcs are present, where any one of these is completely empty, another dark and the third one contains parallel lines.

40. (*c*) In each row and column, only lines that are common to the first two squares are carried forward to the final square.

41. (*e*) Each row and column contains three black and four white stars.

42. (*e*) Each line across and down contains one each of the three symbols. In each line one symbol is black and one is upside down.

43. (*c*) Each row and column contains six complete lines and six broken lines.

44. (*e*) Looking across and down, lines are carried forward from the first two squares to the final square, except where two lines appear in the same position in the first two squares in which case they are cancelled out.

45. (*d*) In each row, the number of circles decreases by 1 and the number of triangles increases by 1 as we move from left to right.

46. (*b*) Each figure contains three different elements-one each on the left and the right side and one in the middle with different colour formats. Middle element in each column is twice unshaded and shaded only once. Similarly the left and right hand elements are shaded twice and once left unshaded. Also, the direction of the middle element is upwards twice and downwards once.

17

Square Completion

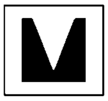
Square Completion is based on formation of a square by joining the piece given in the problem figure with an another piece given in one of the options.

In the questions based on square completion, a problem figure which represents an incomplete square is given, followed by four answer figures and only one out of these four answer figures is appropriate to make a complete square with the piece given in the problem figure. A candidate is required to find out the correct answer figure. This chapter can be better understood through paper and cardboard cut pieces.

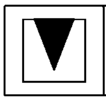
Following examples will provide you a clear idea about the pattern of questions asked in various exams

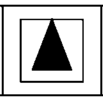
Directions (Example Nos. 1-2) In the following questions, a problem figure is given followed by four answer figures. You have to choose that answer figure which on joining will make a complete square with the problem figure.

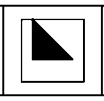
Ex **1** **Problem Figure**

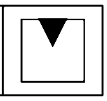


Answer Figures

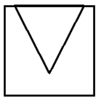

(a)


(b)

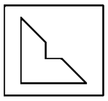

(c)


(d)

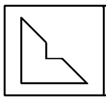
Sol. (*a*) By careful examination of all the answer figures, it is clear that option (a) is the correct answer figure which will fill the blank portion and make a complete square with the problem figure. This is shown as below



Ex **2** **Problem Figure**



Answer Figures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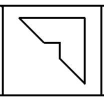
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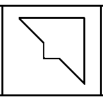
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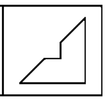
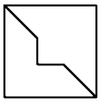

(d)

Sol. (*c*) By careful examination of all the answer figures, it is clear that option (c) is the correct answer figure which will make a complete square with the problem figure. This is shown as below



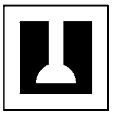
Master Exercise

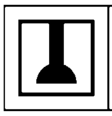
Take a Leap...

Directions (Q. Nos. 1-49) In the following questions, choose the correct answer figure which will make a complete square on joining with the problem figure.

Problem Figure **Answer Figures**

1.

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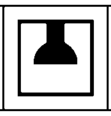
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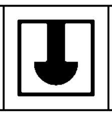
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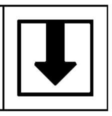
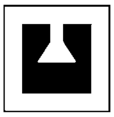
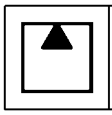

(d)

[SSC (CGL) 2006]

2.

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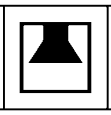
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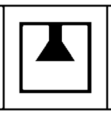
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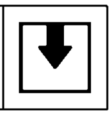
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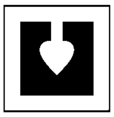
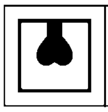
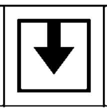
3.




(a)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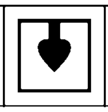
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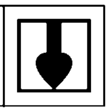
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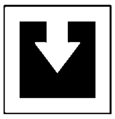
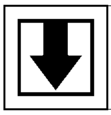
4.

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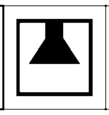
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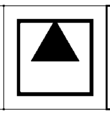
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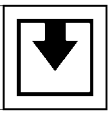
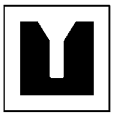
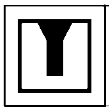

(d)

[SSC (CGL) 2009]

5.

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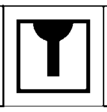
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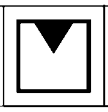
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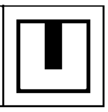
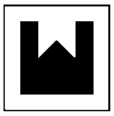
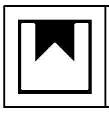
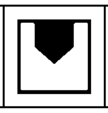

(d)

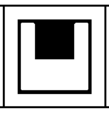
[SSC (CPO) 2010]

6.




(a)


(b)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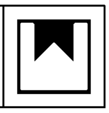
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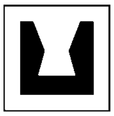

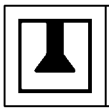
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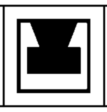
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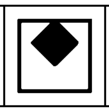
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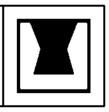
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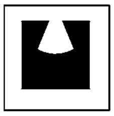
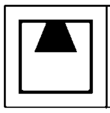
Problem Figure **Answer Figures**

8.

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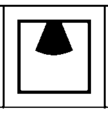
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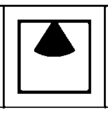
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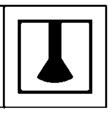
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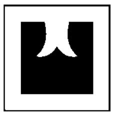

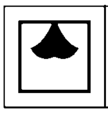
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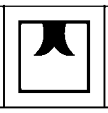
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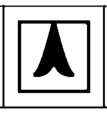
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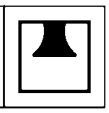
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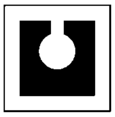

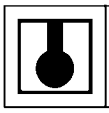
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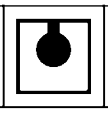
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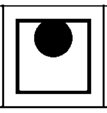
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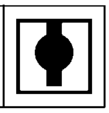
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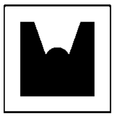
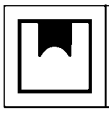
[UP B. Ed. 2009]

11.

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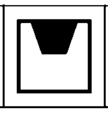
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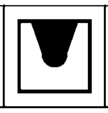
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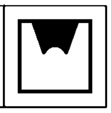
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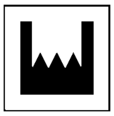

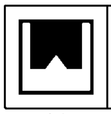
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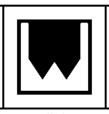
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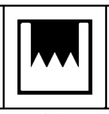
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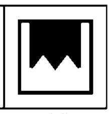
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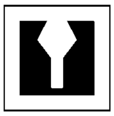

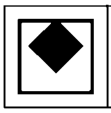
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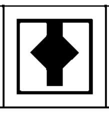
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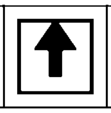
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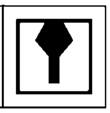
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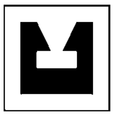

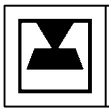
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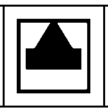
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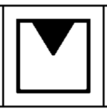
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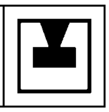
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[SSC (CGL) 2008]

Problem Figure **Answer Figures**

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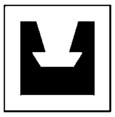
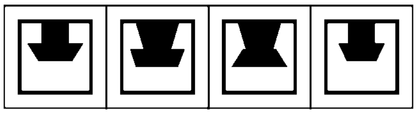
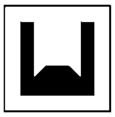


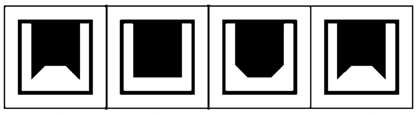


(a) (b) (c) (d)

[UP B. Ed. 2000]

16.

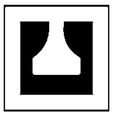


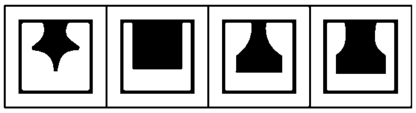


(a) (b) (c) (d)

[SSC (10+2) 2009]

17.





(a) (b) (c) (d)

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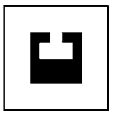
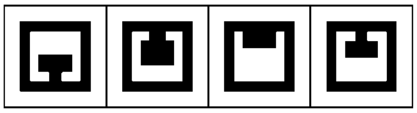
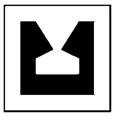


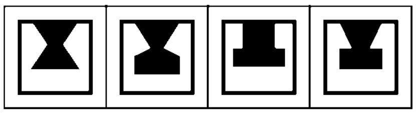


(a) (b) (c) (d)

[SSS (10+2) 2006]

19.





(a) (b) (c) (d)

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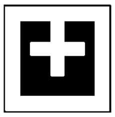

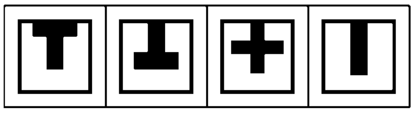

(a) (b) (c) (d)

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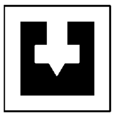

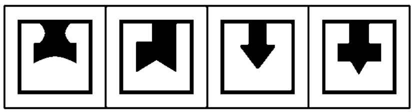

(a) (b) (c) (d)

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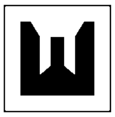

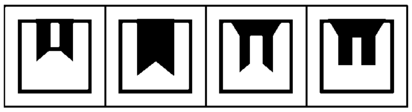

(a) (b) (c) (d)

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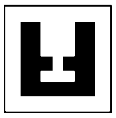
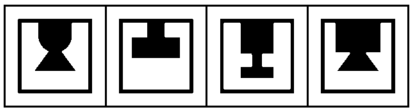


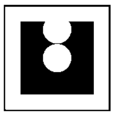


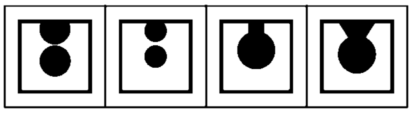
(a) (b) (c) (d)

[SSC (CPO) 2009]

Problem Figure **Answer Figures**

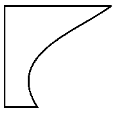
24.

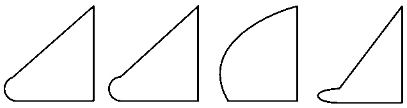




(a) (b) (c) (d)

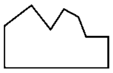
25.

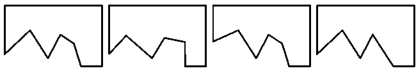




(a) (b) (c) (d)

26.

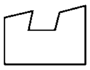


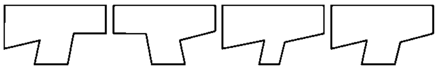


(a) (b) (c) (d)

[SSC (CGL) 2008]

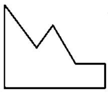
27.

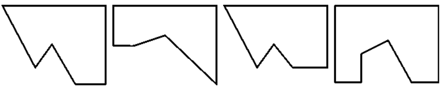




(a) (b) (c) (d)

28.

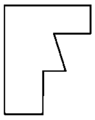


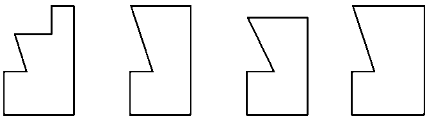


(a) (b) (c) (d)

[GIC 2009]

29.

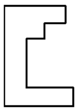


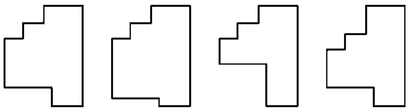


(a) (b) (c) (d)

[UP Police (Constable) 2009]

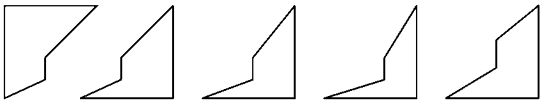
30.





(a) (b) (c) (d)

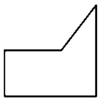
31.

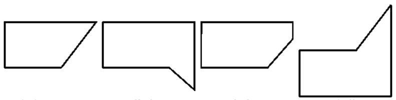


(a) (b) (c) (d)

[UP Police (Constable) 2008]

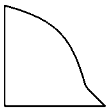
32.

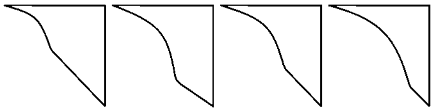




(a) (b) (c) (d)

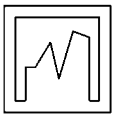
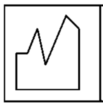
33.





(a) (b) (c) (d)

Problem Figure **Answer Figures**

34.


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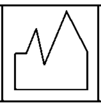
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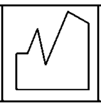
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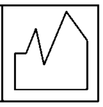
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[SSC (CGL) 2013]

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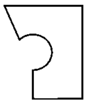
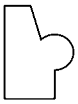
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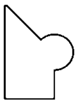
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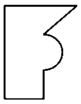
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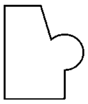
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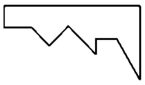
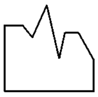
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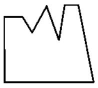
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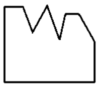
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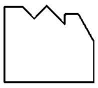
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[SSC (10+2) 2010]

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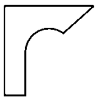
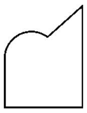
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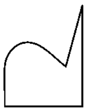
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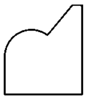
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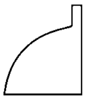
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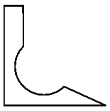
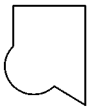
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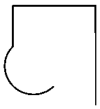
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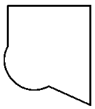
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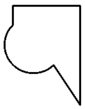
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[RRB (TC/CC) 2009]

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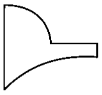
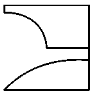
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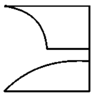
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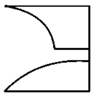
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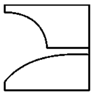
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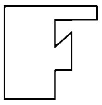
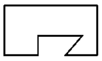
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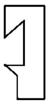
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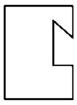
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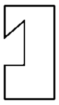
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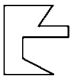
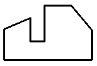
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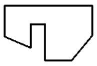
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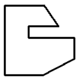
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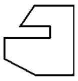
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Problem Figure **Answer Figures**

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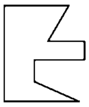
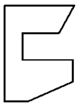
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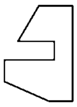
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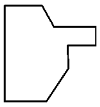
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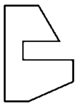
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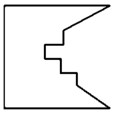
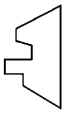
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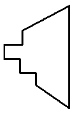
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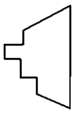
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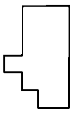
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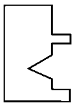
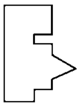
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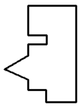
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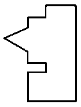
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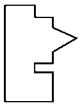
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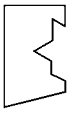
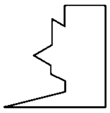
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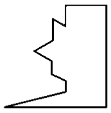
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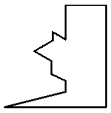
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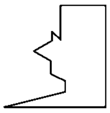
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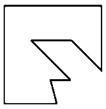
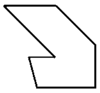
[SSC (CGL) 2007]

46.


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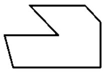
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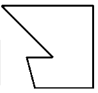
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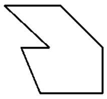
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[RRB (GG) 2009]

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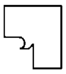
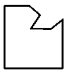
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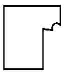
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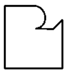
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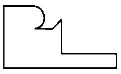
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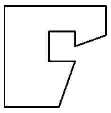
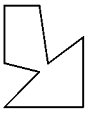
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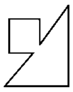
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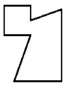
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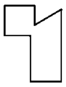
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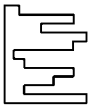
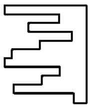
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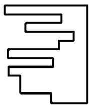
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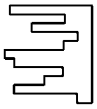
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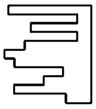
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Response & Interpretations (Master Exercise)

1. (a)	**2.** (c)	**3.** (c)	**4.** (d)	**5.** (a)	**6.** (a)	**7.** (d)	**8.** (b)	**9.** (b)	**10.** (b)
11. (d)	**12.** (c)	**13.** (d)	**14.** (d)	**15.** (b)	**16.** (a)	**17.** (c)	**18.** (d)	**19.** (b)	**20.** (c)
21. (d)	**22.** (c)	**23.** (c)	**24.** (a)	**25.** (c)	**26.** (a)	**27.** (d)	**28.** (a)	**29.** (a)	**30.** (a)
31. (a)	**32.** (a)	**33.** (d)	**34.** (a)	**35.** (b)	**36.** (d)	**37.** (a)	**38.** (a)	**39.** (a)	**40.** (d)
41. (d)	**42.** (b)	**43.** (b)	**44.** (b)	**45.** (b)	**46.** (a)	**47.** (c)	**48.** (c)	**49.** (c)	

ANALYTICAL

1

Statement and Arguments

An argument is a statement or series of statements in which a certain point of view is put up, expressing different opinions for or against something.

Different types of questions covered in this chapter are as follows

- Two Arguments Based Questions
- Three or More Arguments Based Questions

Argument is very important part of analytical reasoning as all possible types of questions from analytical reasoning like inferences, assumptions, course of action, syllogism, etc., are in some way related to argumentation. This is the reason why arguments are called backbone of analytical reasoning.

In simple language, argument is a point of view on a particular matter supported by certain evidences. *e.g.,* If one says that 'Sachin Tendulkar is a great batsman', then he will have to put some evidences to support and prove his point of view. But someone else may have opposite point of view *i.e.,* 'Tendulkar is not a great batsman'. In this case, the person opposing the greatness of Tendulkar too, will put some evidences in support of his negation. Therefore, we can firmly say that an argument may be either in favour of or against a certain subject.

The candidate is required to check the force fullness of the given arguments *i. e.*, if they are weak or strong.

Questions asked from this chapter are basically based on following format

Statement ....
Arguments I. Yes, ...
II. No, ...

A positive or negative point of an argument is a view on a certain subject, supported by evidences.

Technical Aspect of an Argument

In technical terms, an argument may be said to be a sequence of two or more phrases, clauses, sentences that includes a claim/conclusion. Such conclusion is arrived at with the help of one or more than one statement which may be called premise/proposition. Apart from this, an argument has hidden premises also and such hidden premises are called assumptions.

Let us suppose a thrilling T-20 cricket match is going on between India and Pakistan. Chasing a massive total of 210 runs put up by Pakistan, India has already scored 185 runs in 19 overs and therefore, 26 runs are required to win the match in just 6 balls. No doubts, scoring 26 runs in 6 balls is a very-very difficult target and hence you are almost hopeless. But since 'Mahendra Singh Dhoni' is at the crease, there is a ray of hope and this is the reason your friend says to you.

Dhoni is a big blaster, so India will win the match.

If you minutely think over the statement mentioned above, you find that the statement is in the form of an argument (point of view) that proposes the following conclusions.

India will win the match.

But how this conclusion is arrived at? The answer is with the help of following supporting evidence or premise.

Dhoni is a big blaster.

If you give a serious look, you find that both conclusion and premise are connected by an assumption (which is hidden not explicitly stated) that is given below

A big blaster is able to score 26 runs in 6 balls.

Now, we can firmly say that the statement, 'Dhoni is a big blaster, so India will win the match' has three parts as follows.

Part **I** Dhoni is a big blaster.
Part **II** A big blaster is able to score 26 runs in 6 balls.
Part **III** India will win the match.

The foregoing example explains before us the basic characteristics of argumentation but also leaves some doubts live.

Q 1. *Does an argument always has an assumption?*
Q 2. *Does an argument has only one premise always?*

The answer for both the questions is 'No'.

Let us see the explanatory reply for both the questions Q. 1 and Q. 2.

Explanatory Reply for 1 and 2

A point to be noted here is that it is not necessary that every argument has an assumption. Keep in mind, an assumption is the hidden premise (statement/ sentence); it is not explicitly said because it is supposed to be communicated without saying in another words. Assumption is a missing link in the chain of logic and if an argument is complete in itself and does not have missing links, then it does not have any assumption.

Let us see the following argument having no assumption

India needs 26 runs in 6 balls to win the match, only a big blaster like Dhoni can do it. Dhoni is at the crease. So, India will win the match.

In the above argument, all the things have been said clearly and explicitly. There is no hidden premise and hence it can be said that an argument can be without any assumption.

Further, the reply for the Q. 2 also exists in the same argument as it has four premises.

Let us see

Premise **1** India needs 26 runs to win the match.
Premise **2** Only a big blaster like Dhoni can do it.
Premise **3** Dhoni is at the crease.
Premise **4** So, India will win the match

Now, we can firmly say that it is not necessary for an argument to have only one premise always but an argument can have more than one premise.

Steps to Check Force Fullness of Arguments

Checking forcefullness means to find out following

1. *Is the given argument strong?*
2. *Is the given argument weak?*

Now, to check the force fullness, we follow a four step plan as given below

Step **I** Doing preliminary screening.
Step **II** Checking the correctness of the argument.
Step **III** Checking the desirability in case of positive arguments and harmfullness in case of negative arguments.
Step **IV** Checking the proper connectivity of argument with the given statement.

➲ Step I Doing Preliminary Screening

This is the first level test. At this level, one is required to detect certain kind of arguments that can be declared weak without much thinking. The weakness of such arguments are exposed by having a mere look and this is the reason that such arguments do not qualify for further tests (Steps II, III, IV).

Ambiguous Arguments

Such arguments leave doubtful and confused impression on our mind. In fact, it is not clear how such arguments are related to the given statement.

Ex **1** **Statement** Should education be made compulsory for the children upto the age of 14 yr?
Argument Yes, It will improve the level of life.

Sol. This argument does not make it clear that how education upto the age of 14 yr will improve the level of life. Hence, this argument is ambiguous and comes under the category of weak arguments disqualifying itself from further tests.

Too Simple Arguments

Such arguments are in the form of small sentence, which is not supported by any facts or established motions. But absence of facts or established notions does not mean that they are ambiguous. Infact they are very much clear and properly related to the statement but they are simple assertions and only because of this simplicity they are weak.

Ex **2** **Statement** One should eat, drink and make merry because tomorrow one has to die.
Argument No, this philosophy hardly enables us to do anything.

Sol. No doubt that this argument is properly related to the given statement but it is substance less and only a simple assertion. Hence, it is a weak argument and does not qualify for further tests.

Superfluous Arguments

Such arguments only give a glance at the theme given in the statement but do not do a deep down analysis of it. This is the reason they are weak and are not subjected to further tests.

Ex **3** **Statement** Faith is beneficial to the some extent but blind faith is dangerous.
Argument No, Both have their good points as well as bad points.

Sol. The given argument is superfluous as it slightly touches the theme but does not analyse it deeply. Hence, it is a weak argument which cannot qualify for next level tests.

Ex **4** **Statement** There should be loan on the import of foreign books.
Argument Yes, importing foreign books is useful.

Sol. This argument is also superfluous because of the absence of deep analysis of the theme. Hence, it is weak and disqualifies from the next level tests.

Question Back Form

If the given argument is in the form of a question thrown back by the arguer, then it is declared weak.

Ex **5** **Statement** Should T-20 cricket be banned?
Argument Yes, why not?

Sol. Argument is in the form of a question thrown back by the arguer. Hence, it is weak and for this reason, disqualifies from the next level tests.

➲ Step II Checking the Correctness of Arguments

Step II is the second level test. Arguments qualifying for this level test are those which pass the test at Step I. It means such arguments cannot be declared weak in preliminary screening. Further, if an argument is declared correct at second level test, it does not mean that it is strong. Infact passing the second level means qualifying for third level test (Step III). Hence, if an argument is declared correct in Step II, it goes for Step III test, otherwise it is declared weak and automatically disqualifies from being tested at Step III.

(i) An Argument will Pass Step II Test in the Following Cases

If the Argument Favours an Established Fact

A given argument is correct, if it is an established fact that is what is said through the argument is correct. Point to be noted that an established fact may be scientifically established or it may be universally acknowledged.

Ex **6** **Statement** Are nuclear families better than joint families?
Argument No, joint families ensure security and also reduce burden of work.

Sol. Because of having argumentative substance 'ensuring security and reduction of burden', the argument cannot be rejected at preliminary level test (Step I test) and this is the reason, it will qualify for second level test (Step II test). At Step II we find this argument favours this very universally acknowledged fact that joint family has more members in the family than that of a nuclear family. It means a joint family has more joined hands to carry the family. No doubt, more joined hands leads to less pressure of work for a single member. Further, if one member of a joint family goes through a bad phase, then there are so many members to support him which does not happen in case of a nuclear family. It means that a joint family provides a better security to its members. Hence, the given argument is correct and passes the second level test. It means it will be tested at third level test (Step III test).

If the Argument is Permitted to be Correct by 'Experience'

Sometimes, the given argument does not support any established fact but our previous experiences tell us that it is correct.

Let us see the example given below

Ex **7** **Statement** Should government jobs in rural areas have more incentives?
Argument Yes, incentives are essential for attracting government employees.

Sol. The given argument cannot be ignored at preliminary screening (Step I test) as it has substance of argument *i.e.*, 'incentives are essential for attracting'. It means the argument cannot be rejected at Step I test and qualifies for Step II test.

At Step II, we find that our experiences tell us that incentives do lure people. Hence, the given argument will be correct at Step II test and thus will go for the third level test (Step III test).

If the Argument is Permitted to be Correct by 'Logic and Common Sense'

Sometimes a new type of argument comes before you. Such arguments are neither established facts nor can experiences be applied over them as in practice no such cases could have occurred. In such cases only your logic and common sense works.

Let us see the following example

Ex **8** **Statement** Should there be compulsory military training for all?
Argument Yes, it will bring a sense of discipline in the people.

Sol. The given argument cannot be rejected at preliminary screening (Step I test) as it has argumentative substance 'bringing sense of discipline'. Hence, it passes the Step I test. Further, our logic says that military training will definitely bring a sense of discipline in the people. It means it is also correct at Step II test and therefore, goes for third level test, which is Step III.

If the Argument Supports 'Prevailing Notions of Truth'

Certain things/ideas are universally accepted; they are acknowledged by society and this is the reason why they are considered as unquestionable notions of truth.

Infact, in many ways they have very much similarity with 'established facts'.

If an argument supports such ideas/notions, they are considered correct.

Let us see the example given below

Ex **9** **Statement** Should brother-sister marriages be permitted?
Argument No, incest is a sin.

Sol. Because of having argumentative substance 'incest is a sin', the given argument cannot be rejected at preliminary screening. Hence, it passes Step I test. Further, it is socially accepted notion that 'incest is a sin'. It means this idea is a prevailing notion of truth. Hence, it would be declared correct at second level test (Step II test) and would go onward to be tested at third level test (Step III test).

(ii) *An Argument will not Pass Step* II Test and is Declared Weak in the Following Cases

If the Argument Goes Against 'Established Facts

When an argument goes against an established fact, it will be rejected.

Let us see the following example

Ex **10** **Statement** Should we follow 'VBODMAS' rule while solving simplification based problems in arithmetic?
Argument No, it leads to the wrong answer.

Sol. The given argument has substance of argumentation-'VBODMAS' rule leads to the wrong answer.' Hence, it cannot be rejected at preliminary screening, but just a second look makes it clear that this argumentative substance goes against the very established fact that VBODMAS rule must be applied while solving simplification based problems in arithmetic as this is the proper way to obtain the correct answer. Hence, the given argument is rejected at Step II test. It means it is declared weak.

If the Argument is not Permitted to be Correct by 'Experience'

When our previous experience tells us that a given argument is not correct, then the argument is declared weak and therefore, rejected.

Ex **11** **Statement** Should love marriages be preferred to arrange marriages?
Argument Yes, love marriages are more stable.

Sol. Because of having argumentative substance 'the greater stability of love marriages', the argument passes the Step I test but just in a second look our experiences work and tell us that love marriages have been much more unstable than the arrange marriages. Hence, the given argument does not pass Step II test.

If the Argument is not Permitted to be Correct by 'Logic and Common Sense'

When our logic and common sense tell us that the given argument is not correct, then the argument is declared weak.

Ex **12** **Statement** Should India be serious about the indirect war from the part of Pakistan?
Argument No, it will promote international criticism.

Sol. 'Promotion of international criticism' is the substance of the given argument. Hence, the given argument passes the preliminary test (Step I test). But at Step II test, it is declared weak because it suggests a compromise with unity, integrity and sovereignty of India, which also leads to a compromise with our fundamental duty. Why international community should oppose a nation for performing its fundamental duty? Hence, logically the given argument is weak.

If the Given Argument Violates 'Prevailing Notions of Truth'

When the given argument violates the prevailing notions of truth, it is declared weak and is therefore, rejected.

Ex **13** **Statement** Should brother-sister marriages be allowed?
Argument Yes, if both are mature and willing, then they cannot be prohibited from doing it.

Sol. 'Both are mature and willing' is the substance of argument and this is the reason why the given argument cannot be rejected in preliminary screening but when it goes for Step II, it becomes obvious that the argument violates the prevailing notions of truth that 'incest is a sin' as this argument promotes incest and is therefore, declared weak at Step II test.

If the Argument is Based on 'Assumption or Individual Perception'

In certain cases argument promotes/prohibits certain actions which are not universally accepted, which are not properly backed up by previous experiences or logic. Such arguments are based on assumptions or individual perceptions of the author. Such arguments are weak and are therefore rejected.

Ex **14** **Statement** Should certain educational qualifications be made compulsory for ministers?

Argument Yes, because illiterate person cannot take right decision.

Sol. We cannot reject the given argument in preliminary screening as it has substance of argument illiterate person cannot take right decision'. But at Step II test the argument is rejected because it is the assumption/individual perception of the author that an illiterate person cannot take right decision. In fact, there have been examples of illiterate persons taking perfect decisions.

If an Argument is Based on 'Examples or Analogy'

Keep this in your mind that example/analogy based arguments are 'Bad Arguments'. If someone did something in the past, it does not mean the same is pursuable. Such arguments are weak and are therefore, rejected.

Ex **15** **Statement** Should we like roses?

Argument Yes, Jawahar Lal Nehru liked roses.

Sol. 'Nehru liked roses' makes it obvious that the given argument has argumentative substance and therefore, it passes in preliminary screening (Step I test). But at Step II, it is rejected without much thinking because liking and disliking is totally an individual choice. Why should one like certain thing, if someone liked it in the past?

The given argument is example based and therefore falls under the category of bad arguments. In other words, it is a weak argument which cannot qualify for further tests.

➲ Step III Checking the Desirability in Case of Positive Argument

(Harmfullness in Case of Negative Argument)

This is the third level test for which those arguments qualify that were declared correct at Step II test. Point to be noted that correctness of an argument at Step II does not mean that argument is strong one but it does mean that the particular argument has been given a go ahead by Step I and II tests to be further tested at Step III. In other words, correctness of Step II test means the given argument is probably strong argument at Step II and it may be declared definitely strong, if it passes Step III and Step IV tests successfully.

Let us test each of the above mentioned arguments at Step III

Ex **16** **Statement** Are nuclear families better than joint families?

Argument No, joint families ensure security and also reduce the burden of work.

Sol. The above example has already passed Step I and II level tests. At Step III, it is obvious that security and reduction of work is desirable. Hence, this argument passes Step III tests also and qualifies for final test (Step IV test).

Ex **17** **Statement** Should government jobs in rural areas have more incentives?

Argument Yes, incentives are essential for attracting government employees.

Sol. Incentives means persuading to do certain things by giving some extra benefits. No doubts such benefits are desirable in case of the given argument. Hence, the given argument passes at Step III test also and goes forward to be tested finally at Step IV.

Ex **18** **Statement** Should there be compulsory military training for all?

Argument Yes, it will bring a sense of discipline in the people.

Sol. No doubt, discipline is a desirable thing. Hence, the given argument passes the Step III test and goes for final Step IV test.

Ex **19** **Statement** Should brother-sister marriages be permitted?

Argument No, incest is a sin.

Sol. After passing the Step I and II tests, this argument also passes Step III test and goes for final test at Step IV. Why? Because incest is harmful for society. It will promote immoral activities within family resulting in the downgrade of family values.

➲ Step IV Checking the Proper Connectivity of Argument and Statement

At Step IV proper connectivity or proper relation between the argument and statement is checked. At this Step, those arguments are tested that pass Step I, II and III tests but the question is 'what is proper relation' ? Infact, a statement and an argument are said to be properly related, if

(i) The argument pin points the main issue involved.

(ii) The argument is balanced.

Now, the question is 'what is balanced argument'? Remember, a balanced argument should be well matched and in proportion with the intensity of issue given in the statement. *e.g.,* If an argument is given in favour of cutting a potato with sword the such argument is completely imbalanced argument. Why so? Because if a knife is enough to cut potato, then why use a sword for it. Doesn't it seem ill matched? Definitely using a very big tool for a simple issue will be called imbalanced act. Similarly, using a very small tool for very big issue (like cutting a big tree with a knife) is also an imbalanced act.

Now, after understanding the meaning of connectivity or proper relation between argument and statement, we are ready for final level test for those arguments that passed Step III. Such arguments are in the following examples

Ex **20** **Statement** Are nuclear families better than joint families?

Argument No, joint families ensure security and also reduce burden of work.

Sol. At Step IV, we find that the given argument hits the main issue discussed in the statement and it is also well matched. Hence, it passes the final Step IV test to be declared strong.

Ex **21** **Statement** Should government jobs in rural areas have more incentives?

Argument Yes, incentives are essential for attracting government employees.

Sol. The given argument pinpoints the main issue and also in proportion with the intensity of the issue *i.e.,* well matched. Hence, it passes Step IV test to be declared a strong argument.

Ex **22** **Statement** Should there be compulsory military training for all?

Argument Yes, it will bring a sense of discipline in the people.

Sol. No doubt, the given argument put stress on the main issue but the argument is not balanced in this case. Why? In fact, discipline is a desirable thing and it will be generated through military training but compulsory military training is too significant an action to be taken for this purpose. In other words it is like using a very big tool for a very simple issue. Hence, the argument is ill matched and therefore does not pass Step IV test. Thus, it is definitely a weak argument.

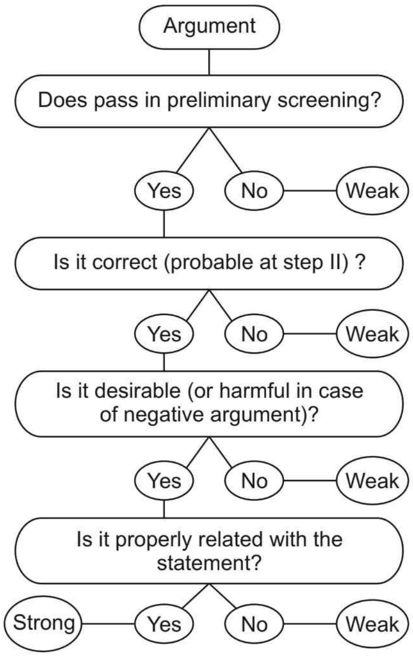
Ex **23** **Statement** Should brother-sister marriages be permitted?

Argument No, incest is a sin.

Sol. The given argument pin points the main issue 'brother-sister marriage' and also goes in proportion with the intensity of the issue. Hence, it is well-matched and is therefore declared strong at Step IV test.

Now, it is clear that out of all the examples discussed in the theory part, only four arguments (in Example Nos. 20, 21, 22, 23) could be tested at all these four Steps. Out of the four, only three arguments (in Example Nos. 20, 21, 23) passed all the four tests and were therefore, declared strong but argument in Example No. 22 could not pass Step IV test and was declared weak.

Solution flow chart


Argument
Does pass in preliminary screening?
Yes
No
Weak
Is it correct (probable at step II) ?
Yes
No
Weak
Is it desirable (or harmful in case of negative argument)?
Yes
No
Weak
Is it properly related with the statement?
Strong
Yes
No
Weak

Based on the types of questions asked in various competitive exams, they can be classified into the following types

Type 1 Two Arguments Based Questions

In the following type of questions, a statement is followed by two arguments and a candidate is asked to examine the strongness or forcefullness of both the arguments.

Examples given below will give a better idea about the type of questions asked in exam

Directions (Example Nos. 24-27) Study the following instructions carefully and then answer the questions that follow

In making decisions about important questions, it is desirable to be able to distinguish between 'strong' and 'weak' arguments so far as they relate to the questions. 'Weak' arguments may not be directly related to the question and may be of minor importance or may be related to the trivial aspect of the question. Each question below is followed by two arguments numbered I and II. You have to decide which of the arguments is a 'strong' argument and which is a 'weak' argument?

Give answer
(a) if only Argument I is strong
(b) if only Argument II is strong
(c) if either I or II is strong
(d) if neither I nor II is strong
(e) if both I and II are strong

***Ex* 24** **Statement** Should parents in India in future be forced to opt for only one child as against two or many at present?

Arguments I. Yes, this is the only way to check the ever increasing population of India.
II. No, this type of pressure tactic is not adopted by any other country in the world.

[UCO Bank (PO) 2008]

Sol. (*d*) Argument I is weak because it is superfluous. It does not go into the reason for population control. Argument II is an argument by example and hence, it is weak.

Ex **25** **Statement** Should the sex determination test during pregnancy be completely banned?

Arguments I. Yes, this leads to indiscriminate female foeticide and eventually will lead to social imbalance.

II. No, people have a right to know about their unborn child. **[UCO Bank (PO) 2008]**

Sol. (*a*) Argument I is strong as female foeticide is undesirable. Argument II is weak. Which right are we talking about? Right to know the gender of the unborn child ? No. Parents can wait till the child's birth.

Ex **26** **Statement** Should all the slums in big cities be demolished and the people living in such slums be relocated outside the city limits?

Arguments I. No, all these people will lose their home and livelihood and hence, they should not be relocated.

II. Yes, the big cities need more and more spaces to carry out development activities and hence, these slums should be removed. **[Syndicate Bank (PO) 2008]**

Sol. (*e*) Argument I is strong on humanitarian grounds. Argument II is strong on economic grounds.

Ex **27** **Statement** Should there be a complete ban on mining coal in India?

Arguments I. Yes, the present stock of coal will not last long, if we continue mining at the present rate.

II. No, we do not have alternate energy source of sufficient quantity.

Sol. (*b*) Argument I is a weak argument as it is not relevant to 'complete ban'. Argument II is strong as banning in such a scenario will lead us into great trouble.

Practice Corner **1.1**

Build your Confidence...

Directions (Q. Nos. 1-31) In making decisions about important questions, it is desirable to be able to distinguish between 'strong' arguments and 'weak' arguments. 'Strong' arguments are those which are both important and directly related to the question. 'Weak' arguments are those which are of minor importance and also may not be directly related to the question or may be related to a trivial aspect of the question. Each question below is followed by two arguments numbered I and II. You have to decide which of the arguments is a 'strong' argument and which is a 'weak' argument?

Give answer

(a) if only Argument I is strong

(b) if only Argument II is strong

(c) if either I or II is strong

(d) if neither I nor II is strong

(e) if both I and II are strong

1. **Statement** Should school education be made free in India?

Arguments I. Yes, this is the only way to improve the level of literacy.

II. No, it will add to the already heavy burden on the exchequer. **[NIFT (UG) 2013]**

2. **Statement** Should there be complete ban on manufacture of fire crackers in India?

Arguments I. No, this will render thousands of workers jobless.

II. Yes, the fire cracker manufacturers use child labour to a large extent. **[NIFT (UG) 2013]**

3. **Statement** Should young entrepreneurs be encouraged?

Arguments I. Yes, they will help in the industrial development of the country.

II. Yes, they will reduce the burden on the employment market. **[NIFT (UG) 2012]**

4. **Statement** Should luxury hotels be banned in India?

Arguments I. Yes, these are places from where international criminals operate.

II. No, affluent foreign tourists will have no place to stay.

5. **Statement** Should there be uniforms for students in the colleges in India as in the schools?

   Arguments I. Yes, this will improve the ambience of the colleges as all the students will be decently dressed.

   II. No, college students should not be regimented and they should be left to choose their clothes for coming to college. **[Syndicate Bank (PO) 2008]**

6. **Statement** Should the sale of all the toys made in China be banned in India?

   Arguments I. Yes, these are very cheap and hence, will put the local toy manufacturers out of business.

   II. No, Indian toys are of much better quality and their sale will not be affected. **[Andhra Bank (PO) 2009]**

7. **Statement** Should there be no examination upto Std IX in all the schools in India?

   Arguments I. No, students need to go through the process of giving examinations right from young age.

   II. Yes, this will help students to think laterally and achieve their creative pursuits. **[Andhra Bank (PO) 2009]**

8. **Statement** Should there be only a uniform rate of income tax irrespective of the level of income?

   Arguments I. Yes, this will substantially reduce the work of the officials of the income tax department.

   II. No, this will reduce government tax collection to a large extent. **[SBI (PO) 2009]**

9. **Statement** Should there be only two political parties in India?

   Arguments I. Yes, in many developed countries there are only two political parties.

   II. No, Indian electorate is not mature to select between only two political parties.

10. **Statement** Should the sale of tobacco products be restricted to only a few outlets in each city/town?

    Arguments I. Yes, this will substantially reduce consumption of tobacco products.

    II. No, those who want to purchase tobacco products should get them at convenient locations. **[SBI (PO) 2009]**

11. **Statement** Keeping in consideration the longevity of life in India, should the age-limit for retirement in the government jobs be increased?

    Arguments I. Yes, other countries have decided so long before.

    II. Yes, it is the actual demand of lakh of employees.

12. **Statement** Should new universities be established in India?

    Arguments I. No, we have not yet achieved the target of literacy.

    II. No, we have to face the problems of highly educated but unemployed youths.

13. **Statement** Should small states be formed out of bigger states in India?

    Arguments I. Yes, there will be greater administrative convenience.

    II. No, it will jeopardise the national integration.

14. **Statement** Should all the government owned educational institutions be given to private sector?

    Arguments I. Yes, there will be upgradation of educational standard in these institutions.

    II. Yes, the educational standard of these institutions will decrease.

15. **Statement** Should the organisations like the UNO be abolished?

    Arguments I. The cold war is going to an end, so there is no role of such organisations.

    II. No, in the absence of these organisations, there will be a World War.

16. **Statement** Should non-vegetarian food be totally banned in our Country?

    Arguments I. Yes, it is expensive and therefore, it is beyond the means of most people in our Country.

    II. No, nothing should be banned in a democratic Country like ours.

17. **Statement** Should we impart sex education in schools?

    Arguments I. Yes, all the progressive nations do so.

    II. No, we cannot impart it in a coeducational school.

18. Statement Should there be a ban on product advertisements ?

Arguments I. No, it is an age of advertising. unless your advertisement is better than that of your other competitors, the products will not be sold.

II. Yes, the money spent on advertising is very huge and it inflates the cost of the products.

19. Statement Should there be a ceiling on the salary of top executives of multinationals in our country?

Arguments I. Yes, otherwise it would lead to unhealthy competition and comparison and our own industry would not be able to withstand that.

II. No, with the advent of liberalisation of economy, any such move would be counter-productive. Once, the economy picks up, this disparity will be reduced.

20. Statement Should the government levy tax on agricultural income also?

Arguments I. Yes, that is the only way to fill Government's coffer.

II. No, 80% of our population live in rural areas.

21. Statement Should public holidays be declared on demise of important national leaders?

Arguments I. No, such unscheduled holidays hamper national progress.

II. Yes, people would like to pay their homage to the departed soul.

22. Statement Should graduation be made minimum educational qualification for entry level jobs in any public sector organisation?

Arguments I. Yes, graduates always perform better than non-graduates by virtue of their higher level of education.

II. No, there are quite a few people who cannot afford to remain unemployed till the completion of graduation and are capable of performing equally well as the graduate candidates.

[Canara Bank (PO) 2007]

23. Statement Should the examination bodies for all university examinations permit the use of calculators?

Arguments I. No, it is necessary for the students to know the methods of manual calculation to make their concepts clear.

II. Yes, manual calculations are no more required with extensive use of computers in all fields.

[Canara Bank (PO) 2007]

24. Statement Should the knowledge of Hindi languages be made compulsory for all the employees of public sector organisations ?

Arguments I. Yes, it is necessary for dealing with people from the educationally backward strata of the society.

II. No, It is not necessary for every employee to have the knowledge of Hindi language. [UCO Bank (PO) 2007]

25. Statement Should it be made compulsory for all the private sector organisations to reserve quota for socially backward classes?

Arguments I. No, the private sector should not be governed by the Government rules.

II. Yes, private sector organisations should also contribute in upliftment of socially backward classes. [IBPS (PO) 2011]

26. Statement Should the women be advised not to travel alone at night in view of the increasing incidences of rape and sexual abuse?

Arguments I. No, instead the government should take measures to control such incidences.

II. Yes, it is difficult even for the police department to control such cases.

[IBPS (PO) 2011]

27. Statement Are the fabulous prices demanded by the art dealers for the original paintings of old masters justified?

Arguments I. Yes, those are unattainable antique pieces of art, hence, worth their price for the collectors of art.

II. No, modern painters can paint as well, if not better than them and for much less price.

28. Statement Should age of retirement be brought down?

Arguments I. Yes, such a decision on the part of the Government would open new job opportunities to youngsters.

II. No, people often marry late and their children do not get settled early.

29. Statement Should India make efforts to harness solar energy to fulfil its energy requirement?

Arguments I. Yes, most of the energy sources used at present are exhaustible.

II. No, harnessing solar energy requires a lot of capital, which India lacks in.

[CG PSC 2013]

30. Statement Should hunting be banned?

Arguments I. Yes, it has been proved to be a definite environment hazard.

II. No, what will hunters do?

31. Statement Should children be prevented completely from watching the television?

Arguments I. No, we get vital information regarding education through television.

II. Yes, it hampers the study of children.

[NIFT (UG) 2012]

Response & Interpretations (1.1)

1. (***b***) Argument I is not strong because word 'only' makes the argument weak as it is not the only real and practical solution to improve the level of literacy. Argument II is strong as it describes the practical problem which may arise out of the decision of making education free in India.

2. (***e***) Both the arguments refer to the practical consequences of the action mentioned in the statement and hence, are strong.

3. (***e***) It is very clear that encouragement to the young entrepreneurs will open up the fields for setting up of new industries. Therefore, it will help in industrial development. Consequently, more job opportunities will be created. Thus, both the arguments are strong.

4. (***b***) The luxury hotels are symbols of country's development and a place for staying the affluent foreign tourists. So, Argument II is a strong one. Argument I is a weak argument because ban on luxury hotels is not a way to end the international criminals.

5. (***e***) Argument I is strong as improved ambience is desirable. Argument II is strong because segmentation of adults is undesirable.

6. (***c***) Both are strong but both cannot be true at the same time. The sale will either be affected (as I says) or not be affected (as II says). Hence, either is strong.

7. (***e***) Argument I is strong as school is the ground where we prepare for the future battles of life. Argument II is strong as examinations kill our creativity, turning us all into mere clerks.

8. (***b***) Argument I is weak because reduction of work load of IT officials is not too desirable a motive. Argument II is strong as reduced tax collection will have a bad impact on state activities.

9. (***d***) Argument I is weak as it is an argument by example. Argument II is weak because it is rubbish. In fact, it is mature having such a criteria, lesser maturity would be required when the choice is limited.

10. (***a***) Argument I is strong as reduced tobacco consumption is desirable. Argument II is weak as such convenience is not desirable.

11. (***b***) Argument I is weak as it is based on example. Argument II is strong as it is the demand of lakhs of employees, it is justified.

12. (***d***) Both are weak. There is no relation between the establishment of universities and the achievement of the literacy target. The second argument appears illogical that due to establishment of more universities we shall have highly educated and unemployed youths. Hence, both the arguments are weak.

13. (***e***) Arguments I and II both are strong as there will be greater administrative convenience by forming small states out of bigger states in India. Secondly, it may also lead to a danger to the national integration.

14. (***a***) Private sector is supposed to be more disciplined and efficient than the government sector. Hence, I is strong. II is rubbish.

15. (***e***) Argument II is strong as the presence of UNO ensures friendly relations among various countries. Argument I is also strong because now-a-days the presence of UNO is felt unelesirable.

16. (***b***) Restriction on the diet of people will deny them their basic human right. So, only Argument II holds strong.

17. (***d***) Both the arguments are ambiguous and not supported by a clear cut logic. Hence, both are weak.

18. (***e***) It is a known fact that unless you create awareness through advertisements, about your product, you lag behind from your competitors. Also, heavy cost on advertisements adds to your product. Hence, both the arguments are strong.

19. (***e***) Arguments I and II both are strong. The high salary of executives in multinational companies would definitely create unhealthy competition and consequently our companies which are not rich will be in difficulties. Secondly, such ceiling will discourage multinationals to take interest in our economy and encourage our companies.

20. (***d***) Arguments I and II both are weak, the argument that government's coffer can be filled only with the tax on agriculture is totally irrelevant. Secondly, it cannot be said that all the 80% rural population are poor.

21. (***a***) Considering India's economy, unscheduled holidays will hamper national progress. Hence, Argument I is strong, Argument II is ambiguous and hence, it is weak.

22. (***d***) Argument I is not necessarily true. Hence, it is weak. Argument II deviates from the core issue. Hence, it is also weak.

23. (***c***) Methods of manual calculations are necessary for individuals. Hence, they should be encouraged. Thus, Argument I is strong Argument II is also strong in its way but since I and II contradict each other, we go for the choice (c).

24. (***a***) Argument I is strong but Argument II is simplistic and hence, it is a weak argument.

25. (***b***) Argument I is not the right way. Thus, Argument I is weak. Argument II is strong as upliftment of socially backward classes is necessary.

26. (***d***) Argument I does not establish proper relation with the statement. Argument II may be an opinion and has not been discussed in the given statement. Hence, I and II both are weak.

27. (***a***) Argument I is strong. Fabulous prices for old master piece are demanded because of their originality and innovative hard efforts.

28. (***e***) Both the arguments are strong because each of the arguments deals with the statement quite logically.

29. (***a***) Argument I is strong *i.e.,* India should make efforts to harness solar energy to fulfill its energy requirement because most of the energy sources used at present are exhaustible. Argument II is weak.

30. (***a***) Logically, only Argument I is strong.

31. (***a***) No, children should not be prevented completely from watching the television because we get vital information regarding education through television and it does not hamper the study of children, if it is watched according to a schedule. So, Argument I is strong, while Argument II is weak.

Type 2 Three or More Arguments Based Questions

In this type, the questions consist of a statement followed by three or more arguments. These arguments are based on some stated facts or any other aspect to support the statement. A candidate is asked to check the forcefullness of these arguments and accordingly make the answer.

Examples given below will give a better idea about such type of questions

Directions (Example Nos. 28-29) Each question below is followed by three arguments numbered I, II and III. You have to decide which of the arguments is a 'strong' argument and which is a 'weak' argument.

Ex **28** **Statement** Should there be a complete ban on celebration of various 'days' in colleges'?

Arguments I. No, there is nothing wrong in celebrating the days and enjoying once in a while.

II. Yes, children are giving more importance to such celebrations than the studies.

III. No, this type of celebration gives opportunity for children to express their feelings.

(a) I and II are strong
(b) II and III are strong
(c) Only III is strong
(d) Only II is strong
(e) None of these

Sol. (*b*) Argument I is vague because it lacks a proper reason. Arguments II and III are strong as they provide a proper answer to the question. Argument II explains the correct reason for putting a ban on such days. Also, during these days the children can express their feelings, so III is also correct.

Ex **29** **Statement** Should the minimum age of marriage for boys be brought down to 18 yr?

Arguments I. No, an 18 yr old boy is not capable of taking responsibility to start a family.

II. Yes, since the minimum age for marriage for girls is 18 yr, the same should be applicable for boys as well.

III. No, the boys should be allowed to marry only after they become self-dependent.

(a) Only I is strong
(b) Only II is strong
(c) Only III is strong
(d) Only either I or II is strong
(e) None of these

Sol. (*a*) Only Argument I holds strong to support the statement. Argument II shows the comparison between girls and boys, so it is weak and also Argument III is vague.

Direction (Example No. 30) In the question below, a statement is given followed by four arguments. You have to decide which of the following Argument(s) is strong and which is 'weak'.

***Ex* 30 Statement** Should the consumption of aerated drinks be banned in India?

Arguments I. Yes, this is the only way to reduce the risk of exposing people to some diseases.
II. No, each individual should have right to choose what the wants.
III. No, there is no confirmed evidence that such products have adverse effects on human body.
IV. Yes, it is banned in many other countries also.

(a) Only I is strong (b) I and II are strong (c) Only III is strong (d) I and IV are strong
(e) All are strong

Sol. (c) Argument I is not strong due to the word 'only'. Argument II is not strong because it is baseless and Argument III is strong because there is no confirmed evidence that such products have adverse effects on human body. What other countries are doing, we should not follow that blindly. So, Argument IV is not strong.

Practice Corner 1.2

Build your Confidence...

Directions (Q. Nos. 1-11) In making decisions about important questions, it is desirable to be able to distinguish between 'strong' arguments and 'weak' arguments. 'Strong' arguments must be both important and directly related to the question. 'Weak' arguments may not be directly related to the question and may be of minor importance or may be related to the trivial aspects of the question. Each question below is followed by three arguments numbered I, II and III. You have to decide which of the arguments is a 'strong' argument and which is a 'weak' argument?

1. Statement Should smoking cigarettes and drinking alcohol by the actors be completely banned in the movies in India?

Arguments I. Yes, this will significantly reduce the trend of smoking cigarettes and drinking alcohol among the youth in India.
II. No, there should be no such ban on the creative pursuits of the filmmaker.
III. No, the films portray the society and hence such scenes should be an integral part of the movie, if the storyline demands so. **[UCO Bank (PO) 2008]**

(a) None is strong
(b) I and II are strong
(c) II and III are strong
(d) I and III are strong
(e) All are strong

2. Statement Should sale of vital human organs be made legal in India?

Arguments I. No, it goes against our culture.
II. No, this will lead to unhealthy practices.
III. Yes, this will bring an end to the illegal trading of human organs. **[Canara Bank (PO) 2008]**

(a) None is strong
(b) I and II are strong
(c) Only III is strong
(d) II and III are strong
(e) All are strong

3. Statement Should the conscription of citizens for defence services be made compulsory in India?

Arguments I. Yes, this is the only way to tackle the serious shortage of manpower in defence services.
II. No, instead the compensation package be made comparable to other job sectors to attract people to join defence services.
III. Yes, many other countries have made this compulsory. **[Andhra Bank (PO) 2008]**

(a) Only I is strong
(b) Only II is strong
(c) I and II are strong
(d) Either I or II is strong
(e) None of the above

4. Statement Should the salary and perquisites of public sector undertaking employees be made equivalent to those in the private sector?

Arguments I. Yes, this will help the public sector undertaking to attract and retain competent workforce.

II. No, public sector undertakings cannot afford to pay salaries to the level of private sector.

III. Yes, otherwise the public sector undertakings will not be able to compete with the private sector organisations. **[Syndicate Bank (PO) 2008]**

(a) None is strong
(b) Only III is strong
(c) Only I is strong
(d) Only II is strong
(e) I and III are strong

5. Statement Should the Government order closure of all educational institutions for a month to avoid fast spreading of the contagious viral infection?

Arguments I. No, the closure of educational institutions alone is not the solution for curbing the spread of the viral infection.

II. No, students will visit crowded places like malls, markets, play grounds etc in more numbers and spread the disease, as they will have a lot of spare time at their disposal.

III. Yes, young persons are more prone to get affected by the viral infection and hence, they should remain indoors. **[Syndicate Bank (PO) 2009]**

(a) None is strong
(b) Only I is strong
(c) Only III is strong
(d) I and II are strong
(e) All are strong

6. Statement Should the Government ban export of all types of foodgrains for the next one year to tide over the unpredicted drought situation in the country?

Arguments I. Yes, there is no other way to provide food to its citizens during the year.

II. No, the Government does not have its jurisdiction over private exporters for banning export.

III. Yes, the Government should not allow the exporters to export foodgrains and procure all the foodgrains held by such exporters and make it available for home consumption.

(a) I and II are strong
(b) II and III are strong
(c) I and III are strong
(d) All are strong
(e) None of these

7. Statement Should there be a limit on drawing ground water for irrigation purposes in India?

Arguments I. No, irrigation is of prime importance for food production in India and it is heavily dependent on ground water in many parts of the country.

II. Yes, water tables have gone down to alarmingly low levels in some parts of the country where irrigation is primarily dependent on ground water, which may lead to serious environmental consequences.

III. Yes, India just cannot afford to draw groundwater any further as the international agencies have cautioned India against it.

(a) I and II are strong
(b) II and III are strong
(c) I and III are strong
(d) All are strong
(e) None of these

8. Statement Should there be a complete ban on setting up thermal power plants in India?

Arguments I. Yes, this is the only way to control further addition to environmental pollution.

II. No, there is a huge shortage of electricity in most parts of the country and hence, generation of electricity needs to be augmented.

III. No, many developed countries continue to set up thermal power plants in their countries. **[UCO Bank (PO) 2010]**

(a) None is strong
(b) Only I is strong
(c) Only II is strong
(d) Only III is strong
(e) Either I or II is strong

9. Statement Should there be a restriction on the construction of high rise buildings in big cities in India?

Arguments I. No, big cities in India do not have adequate open land plots to accommodate the growing population.

II. Yes, only the builders and developers benefit from the construction of high-rise buildings.

III. Yes, the government should first provide adequate infrastructural facilities to the existing buildings before allowing the construction of new high-rise buildings. **[UCO Bank (PO) 2010]**

(a) Only II is strong
(b) Only III is strong
(c) I and III are strong
(d) Only I is strong
(e) None of the above

10. Statement Should road repair work in big cities be carried out only late at night?

Arguments I. No, this way the work will never get completed.

II. No, there will be unnecessary use of electricity.

III. Yes, the commuters will face a lot of problems due to repair work during the day. **[Canara Bank (PO) 2010]**

(a) None is strong
(b) Only I is strong
(c) Only III is strong
(d) I and III are strong
(e) I and II are strong

11. Statement Should all the deemed universities be derecognised and attached to any of the Central or state universities in India?

Arguments I. Yes, many of these deemed universities do not conform to the required standards of a full-fledged university and hence, the level of education is compromised with.

II. No, these Deemed Universities have been able to introduce innovative courses suitable to the requirement of various industries as they are free from strict Government controls.

III. Yes, many such universities are basically money spinning activities and education takes a backseat in these institutions. **[Canara Bank (PO) 2010]**

(a) I and II are strong
(b) II and III are strong
(c) I and III are strong
(d) All are strong
(e) None of the above

Directions (Q. Nos. 12-13) In making decisions about important questions, it is desirable to be able to distinguish between 'strong' arguments and 'weak' arguments. 'Strong' arguments must be both important and directly related to the question. 'Weak' arguments may not be directly related to the question and may be of minor importance or may be related to the trivial aspects of the question. Each question below is followed by four arguments numbered I, II, III and IV. You have to decide which of the arguments is a 'strong' argument and which is a 'weak' argument?

12. Statement Should the rule of wearing helmet for both driver and pillion rider while driving a motor bike be enforced strictly?

Arguments I. Yes, it is a rule and should be followed strictly by all.

II. No, each individual knows how to protect his own life and it should be left to this discretion.

III. No, it does not ensure safety as only the head is protected and rest of the body is not.

IV. Yes, it is a necessity as head, being the most sensitive organ, is protected by the helmet.

(a) None is strong
(b) I and III are strong
(c) I and IV are strong
(d) II and IV are strong
(e) All are strong

13. Statement Should all the management institutes in the country be brought under government control?

Arguments I. No, the government does not have adequate resources to run such institutes effectively.

II. No, each institute should be given freedom to function on its own.

III. Yes, this will enable to have standarised education for all the students.

IV. Yes, only then the quality of education would be improved.

(a) None is strong
(b) I, II and III are strong
(c) I and II are strong
(d) All are strong
(e) Only III is strong

Response & Interpretations (1.2)

1. (*d*) Argument I is strong because such a reduction in trend will be a desirable consequence. Argument II is weak as it silent as to what effect the ban will have on the creative pursuits. III is strong as a ban will take away from the power of the portrayal.
2. (*a*) Argument I is weak because talking of culture is irrelevant in this case. Infact, Argument I is not even true. Argument II is weak because it is simplistic. We are not told what these 'unhealthy practices' will be. Argument III is weak because it is superfluous.
3. (*e*) Argument I is weak because it is not true. Look at the alternative given in II. Argument II is also not strong because instead of getting into the reason, it provides an alternative. Argument III is simplistic and hence weak. It is argument by example.
4. (*e*) Competent work force is desirable. Hence, Argument I is strong. Argument II does not appear to be true for all PSUs. And even it is true, an argument that takes recourse in helplessness seems to fall short on merit. Argument III is strong as competition is desirable.
5. (*c*) Argument I is weak as it merely tries to evade the issue. Argument II may turn out to be true but it is based on a negative mind set, may be it's mere of an assumption. Hence, II is weak. Argument III gets into the reason and is therefore strong.
6. (*e*) Argument I is weak as it is not true. Argument II is also weak on the same grounds. Argument III is strong as it elaborates on how banning exports would help tackle the drought situation.
7. (*a*) Argument I is strong as it addresses the problem of food scarcity. Argument II is strong as environment is a very important issue. Argument III is weak as 'the caution' part is neither convincing nor mature.
8. (*c*) Argument I is weak because of the use of only Argument II is strong as the country's power need cannot be ignored. Argument III is weak because it is the argument based on example.
9. (*c*) Argument I is strong as space constraints do play a crucial role. Argument II is false as the buyers also benefit in terms of cost and greenery. Argument III is strong as merely constructing new buildings does not make sense. First adequate infrastructural facilities should be provided to the existing buildings.
10. (*c*) Argument I is not true for all roads : work is often done in phases and meets completion. Argument II is weak : such use of electricity cannot be termed 'unnecessary.' Argument III is strong as it shows concern for commuters.
11. (*e*) Only Argument II is strong, Arguments I and III are weak as 'All' cannot be punished for the fault of 'many.'
12. (*c*) Arguments I and IV are strong because the rule of wearing helmet for both driver and pillion rider while driving a motor bike should be followed strightly by all. It protects our head which is the most sensitive organ of human body.
13. (*a*) None of the arguments has strong reasons to support or to oppose the given statements. So, none of the arguments is strong.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-31) In making decisions about important questions, it is desirable to distinguish between a 'strong' argument and a 'weak' argument. A 'strong' argument must be both important and directly related to the question. A 'weak' argument may not be directly related to the question and may be of minor importance or may be related to the trivial aspect of the question. Each question below is followed by two arguments numbered I and II. You have to decide which of the arguments is 'strong' and which is 'weak'.

Give answer

(a) if only Argument I is strong
(b) if only Argument II is strong
(c) if either I or II is strong
(d) if neither I nor II is strong
(e) if both I and II are strong

1. Statement Should the major part of school examinations be made objective type?

Arguments I. No, objective type examination does not test the students ability to express.

II. Yes, this is the best method of assessing one's ability and knowledge. [Andhra Bank (PO) 2007]

2. Statement Should government service in rural areas atleast for two years after completion of graduation be made compulsory for the students of medicine?

Arguments I. Yes, it is everyone's duty to serve the people in rural areas and contribute to their upliftment.

II. No, it cannot be applied only to the medicine students, since anyways they are contributing during their studies and particularly in the period of internship. [Andhra Bank (PO) 2007]

3. Statement Should all the factories in the cities be shifted to the outskirts, far away from the main city?

Arguments I. Yes, this is an essential Step for controlling pollution in the city.

II. No, such a Step will lead to lot of inconvenience to the employees of the factories and their families as well. [Canara Bank (PO) 2007]

4. Statement Should the practice of rewarding high scores be stopped to handle frustration among the moderate scorers?

Arguments I. No, it is necessary to motivate the high scorers and reward is one of the best ways of motivating.

II. Yes, too much appreciation for high scores affects the moderate students adversely at times leading to extreme situations. [UCO Bank (PO) 2007]

5. Statement Should there be a total ban on use of plastic bags?

Arguments I. No, instead the thickness of plastic bags, which can be used without much damage to the environment, should be specified.

II. Yes, use of plastic bags causes various problems like water pollution and water logging and hence, it is necessary to ban it. [UCO Bank (PO) 2007]

6. Statement Should there be a complete ban on sale of soft drinks within the premises of all the schools in India?

Arguments I. Yes, this will considerably decrease the consumption of such drinks by the school children as these contain harmful chemicals.

II. No, the authorities do not have right to impose such restriction in a democratic country.

7. Statement Should there be a complete ban on use of chemical pesticides in the agricultural fields?

Arguments I. No, the crops will get damaged by the pests as almost each crop is attacked by pests during its life cycle.

II. Yes, this pollutes the environment and also contaminates ground water, instead biological pesticides should be used.

8. Statement Should English be the medium of instruction for higher education in India?

Arguments I. Yes, even in advanced countries like UK and USA, the medium of instruction is English for higher education.

II. Yes, English is much widely spoken language in the world today.

9. Statement Should religion be taught in our schools?

Arguments I. No, ours is a secular state.

II. Yes, teaching religion helps inculcate moral values among children.

10. Statement Will the Cauveri river water dispute be settled down at last?

Arguments I. Yes, the politicians of Karnataka and Tamil Nadu will come to some satisfactory political settlement.

II. No, both the states have their own interests, hence, the dispute will be prolonged.

11. Statement Is India going to have elections in near future?

Arguments I. Yes, some of the political parties are creating a situation that demands elections.

II. No, our Prime Minister is a strong man, has a good support and will complete his term.

12. Statement Does President's rule in a State improve law and order in the disturbed areas?

Arguments I. Yes, the Chief Minister does not know how to cope with the deteriorating conditions of law and order.

II. President rule is better than rule by State Government.

13. Statement Can the young enjoy the old movies?

Arguments I. Yes, the movies of these days have no proper story.

II. No, the old movies lack the glamour and fastness of modern movies.

14. Statement Should adulteration in food stuff be considered serious crime?

Arguments I. Yes, the stuff may cause ill health and sometimes result in the death of the poor victims.

II. No, the things that are mixed with food stuff are not really poisonous.

15. Statement Should private sector be permitted to operate telephone services?

Arguments I. Yes, they are operating in advanced Western countries.

II. No, it is risky to put them in private hands.

16. Statement Should so much of money be spent on games and sports?

Arguments I. Yes, we are a rich nation and can easily spare any amount of money for games and sports.

II. No, our teams are unable to put up a good show in international competitions.

17. Statement Are educational institutions responsible for unrest among the youth?

Arguments I. Yes, there is no discipline in educational institutions.

II. No, there is no disciplinary problem in educational institutions.

18. Statement Should political parties be banned?

Arguments I. Yes, it is necessary to teach a lesson to the politicians.

II. No, it will lead to an end of democracy.

19. Statement Should coal engines be replaced by electric engines in trains?

Arguments I. Yes, coal engines cause a lot of pollution.

II. No, India does not produce enough electricity to fulfil even the domestic needs.

20. Statement Do discussions lead to solutions of disputes?

Arguments I. Yes, all the pros and cons are weighted in their proper perspectives and the right solution is reached.

II. No, no one is really convinced.

21. Statement Is the verdict of a judge always just and the right one?

Arguments I. Yes, the judges are very learned and intelligent.

II. No, tricky lawyer and false evidence often twist the case and mislead the judge.

22. Statement Do thin clothes suit people who are over-weight?

Arguments I. Yes, they cling to wearer making one look less fat.

II. No, in thin clothes bulges become more prominent.

23. Statement Is investment of money in insurance policies a wise step?

Arguments I. Yes, it ensures security and covers risks.

II. No, by the time the policy matures, the value of money falls down considerably.

24. Statement Should parents play with their children?

Arguments I. Yes, it helps in building up a healthy and much needed companionship between children and parents.

II. No children treat their parents like equals and there is no distance left.

25. Statement Should cottage industries be encouraged in rural areas?

Arguments I. Yes, rural people are creative.

II. Yes, this would help to solve the problem of unemployment to some extent.

26. Statement Do commoners, who marry distinguished persons, have a happy life?

Arguments I. Yes, they get so much honour and respect.

II. No, their spouse and in laws don't respect them sufficiently and treat them with contempt.

27. Statement Should little children be loaded with such heavy school bags?

Arguments I. Yes, a heavy bag means more knowledge.

II. No, heavy school bags spoil the posture of the children.

28. Statement Do children adopted from poor families love their new rich parents like their own poor ones?

Arguments I. Yes, because they are loved, cared for and provided with comforts of life.

II. No, because in the criminal world, they become selfish and hard boiled.

29. Statement Do Scientists believe in religion?

Arguments I. Yes, because Science as a profession does not come in the way of faith.

II. No, because religion and faith don’t go together.

30. Statement Should competitive examinations for selecting candidates for job consist through objective test only?

Arguments I. Yes, the assessment of objective test is reliable.

II. No, the number of questions to be answered is always very large.

31. Statement Should strikes in the field of education be banned?

Arguments I. Yes, it is against professional ethics.

II. Yes, it affects the students adversely.

Directions (Q. Nos. 32-45) In making decisions about important questions, it is desirable to distinguish between a 'strong' argument and a 'weak' argument. A 'strong' argument must be both important and directly related to the question. A 'weak' argument may not be directly related to the question and may be of minor importance or may be related to the trivial aspect of the question. Each question below is followed by three arguments numbered I, II and III. You have to decide which of the arguments is 'strong' and which is 'weak'.

32. Statement Should the Government impose restrictions on access to sensitive information to the journalists to avoid the media hype?

Arguments I. Yes, the media creates hype and publishes distorted information at times.

II. No, journalists should have an access to all the information as media is the best source to expose the malfunction sin the society.

III. Yes, at times it leads to harassment of those who are affected and alleged to be involved in the crisis.

(a) All I, II and III are strong (b) I and II are strong
(c) II and III are strong (d) Only II is strong
(e) None is strong

33. Statement Should the Government introduce a system of obtaining bond from students for working in India before sanctioning education loan for higher studies?

Arguments I. No, this is not a workable solution and will obstruct the development of young talent in the country.

II. Yes, this is the only way to ensure use of the talent of our country for the development of the country and not only an individual.

III. No, this step will be too harsh.

(a) Only I is strong (b) Only II is strong
(c) Only I and II are strong (d) None is strong
(e) None of these

34. Statement Should there be only few banks in place of numerous smaller banks in India?

Arguments I. Yes, This will help secure the investor's money as these big banks will be able to withstand intermittent market related shocks.

II. No, A large number of people will lose their jobs as after the merger many employees will be redundant.

III. Yes, This will help consolidate the entire banking industry and will lead to healthy competition. **[SBI (PO) 2012]**

(a) None is strong (b) Only I and II are strong
(c) Only II and III are strong (d) Only I and III are strong
(e) All are strong

35. Statement Should there be a complete ban on registration of new cars for a few months in the big cities in India?

Arguments I. Yes, this will significantly reduce the number of cars on the already overcrowded roads of the big cities in India.

II. Yes, the existing car owners will be very happy as they will face less traffic snarls in peak hours.

III. No, this is highly discriminatory against those who decide to buy cars now and hence should not be enforced.

(a) Only I is strong (b) I and III are strong
(c) Only III is strong (d) All are strong
(e) None of these

36. Statement Should there be a complete ban on genetically modified imported seeds?

Arguments I. Yes, this will boost the demand of domestically developed seeds.

II. No, this is the only way to increase production substantially.

III. Yes, genetically modified products will adversely affect the health of those who consume these products.

(a) I and II are strong (b) Only II is strong
(c) II and III are strong (d) I and III are strong
(e) All are strong

37. Statement Should there be a complete ban on Indian professionals seeking jobs elsewhere after getting their education in India?

Arguments I. Yes, this is the only way to sustain present rate of technological development in India.

II. No, the Indians settled abroad send huge amount of foreign exchange and this constitutes a significant part of foreign exchange reserve.

III. No, the practical knowledge gained by Indians by working in other countries help India to develop its economy.

(a) None is strong (b) All are strong
(c) I and II are strong (d) Only III is strong
(e) II and III are strong

38. Statement Should the government ban export of all types of food grains for the next one year to tide over the unpredicted drought situation in the country?

Arguments I. Yes, there is no other way to provide food to its citizens during the year.

II. No, the government does not have its jurisdiction over private exporters for banning exporters.

III. Yes, the government should not allow the exporters to export foodgrains and procure all the foodgrains held by such exporters and make it available for home consumption.

(a) I and II are strong
(b) II and III are strong
(c) I and III are strong
(d) All I, II and III are strong
(e) None of these

39. Statement Should there be a common syllabus for all subjects in graduate courses in all the universities across the country?

Arguments I. Yes, this is the only way to spring in uniformity in the education system in the country.

II. Yes, it will help standardise the quality of graduation certificates being given by different universities in the country.

III. No, each university should have the autonomy to decide its syllabus based on the specific requirement of the university. **[RBI (Grade 'B') 2009]**

(a) None is strong
(b) Only I is strong
(c) Only II is strong
(d) I and II are strong
(e) II and III are strong

40. Statement Should all those students who failed in one or two subjects in HSC be allowed to take admission in degree courses and continue their study, subject to their successfully passing in the supplementary examination?

Arguments I. Yes, this will help the students to complete their education without a break of one year.

II. Yes, this is a forward looking strategy to help the students and motivate them for higher studies.

III. No, such students do not choose to continue their studies without having passed in all the subjects in HSC.

(a) Only I is strong
(b) Only II is strong
(c) Only III is strong
(d) Either II or III and I are strong
(e) None of the above

41. Statement Should all the students graduating in any discipline desirous of pursuing post-graduation of the subjects of their choice be allowed to enroll in the post-graduate courses?

Arguments I. Yes, the students are the best judge of their capabilities and there should not be restriction for joining post-graduate courses.

II. No, the students need to study relevant subjects in graduate courses to enroll in post-graduate courses and the students must fulfill such conditions.

III. No, there are not enough institutes offering post-graduate courses which can accommodate all the graduates desirous of seeking post-graduate education of their own choice.

(a) All are strong
(b) I and II are strong
(c) II and III are strong
(d) I and III are strong
(e) None of these

42. Statement Should admission to all professional courses be made on the basis of past academic performance rather than through entrance tests?

Arguments I. Yes, it will be beneficial for those candidates who are unable to bear the expenses of entrance tests.

II. Yes, many deserving candidates securing high marks in their qualifying academic examinations do not perform well on such entrance tests.

III. No, the standard of examinations and assessment conducted by different boards and universities are not comparable and hence there is a need to conduct entrance tests to calibrate them on a common yardstick.

(a) I and II are strong
(b) II and III are strong
(c) I and III are strong
(d) III is strong
(e) All are strong

43. Statement Should 'literacy' be the minimum criterion for becoming a voter in India?

Arguments I. No, mere literacy is no guarantee of political maturity of an individual.

II. Yes, illiterate people are less likely to make politically wiser decisions of voting for a right candidate or party.

III. No, voting is the constitutional right of every citizen.

(a) None is strong (b) I and II are strong
(c) III is strong (d) II and III are strong
(e) All are strong

44. Statement Should the public sector undertakings be allowed to adopt hire and fire policy?

Arguments I. Yes, this will help the public sector undertakings to get rid of non-performing employees and reward the performing employees.

II. No, this will give an unjust handle to the management and they may use it indiscriminately.

III. Yes, this will help increase the level of efficiency of these organisation and these will become profitable establishments.

(a) None is strong (b) I and II are strong
(c) II and III are strong (d) I and III are strong
(e) All are strong

45. Statement Should all the indirect taxes in India be combined into a single tax on all commodities?

Arguments I. Yes, this will considerably simplify the tax collection mechanism and the cost of collecting tax will also reduce.

II. Yes, the manufacturers and traders will be benefited by this which in turn will boost tax collections.

III. No, no other country has adopted such system.

(a) None is strong (b) I and III are strong
(c) Only II is strong (d) II and III are strong
(e) None of these

Directions (Q. Nos. 46-50) In making decisions about important questions, it is desirable to distinguish between a 'strong' argument and a 'weak' argument. A 'strong' argument must be both important and directly related to the question. A 'weak' argument may not be directly related to the question and may be of minor importance or may be related to the trivial aspect of the question. Each question below is followed by four arguments numbered I, II, III and IV. You have to decide which of the arguments is 'strong' and which is 'weak'.

46. Statement Is it necessary that education should be job oriented?

Arguments I. Yes, the aim of education is to prepare persons for earning.

II. Yes, educated person should stand on his own feet after completion of education.

III. No, education should be for sake of knowledge only.

IV. No, one may take up agriculture where education is not necessary. **[SSC (CGL) 2011]**

(a) I and II arguments are strong
(b) III and IV arguments are strong
(c) Only I argument is strong
(d) I and III arguments are strong

47. Statement Should all the school teachers be debarred from giving private tuitions?

Arguments I. No, the needy students will be deprived of the expertise of these teachers.

II. Yes, this is an injustice to the unemployed educated people who can earn their living by giving tuitions.

III. Yes, only then the quality of teaching in schools will improve.

IV. Yes, now salary of these teachers is reasonable. **[Syndicate Bank (PO) 2009]**

(a) I and III are strong (b) I, II and III are strong
(c) III and IV are strong (d) II, III and IV are strong
(e) None of these

48. Statement Should people with educational qualification higher than the optimum requirements be debarred from seeking jobs?

Arguments I. No, it will further aggravate the problem of educated unemployment.

II. Yes, it creates complexes among employees and affects the work adversely.

III. No, this goes against the basic rights of the individuals.

IV. Yes, this will increase productivity. **[PNB (PO) 2006]**

(a) I and III are strong (b) All are strong
(c) II and IV are strong (d) Only III is strong
(e) None of these

49. Statement Should class IV children have Board examination?

Arguments I. Yes, this will motivate the children to study and get higher marks and thus more knowledge can be imbibed at a younger age.

II. No, the children will be forced to study and won't enjoy the process.

III. Yes, in today's competitive world the children need to be prepared right from the beginning to face such difficult examinations.

IV. No, this will add pressure on tender aged children and leave very little time for them to play.

[Allahabad Bank (PO) 2004]

(a) All are strong (b) I, II and IV are strong (c) II, III and IV are strong (d) I and III are strong
(e) I and IV are strong

50. **Statement** Should there be reservation of jobs in the organisations in the private sector also as in the public sector undertakings in India?

Arguments I. Yes, this would give more opportunities of development to the weaker sections of the society and thus help reduce the gap between the affluent and the downtrodden in India.

II. No, the private sector does not get any government assistance and therefore, they should not be saddled with such policies.

III. No, now where else in the world such a practice is being followed.

IV. No, the management of the private sector undertaking would not agree to such compulsions.

(a) Only I is strong (b) I and II are strong (c) I, II and IV are strong (d) I and IV are strong
(e) All are strong

Response & Interpretations (Master Exercise)

1. (***a***) Argument I is strong as the ability to express gives groundness to one's education. Argument II is weak because to call a method 'the best' without giving any reason is a simplistic assertion.

2. (***d***) Argument I is weak because it is not true. You cannot sweep 'everyone' with the same brush. Argument II is ambiguous. It first says, 'it cannot be applied only to the medicine students'. But remaining part of the argument has got nothing to do with this only.

3. (***a***) Argument I is strong because pollution control is highly desirable. Argument II is weak.

4. (***a***) Argument I is strong as motivation is desirable action. Argument II is weak as it is superfluous. It is simply restating the question.

5. (***e***) Argument I is strong as it takes a wise, reconciliatory approach to the problem. Argument II is also strong as water pollution, etc. may severally harm mankind.

6. (***a***) Argument I is strong because soft drinks contain some harmful chemicals which are harmful to school children. But Argument II is not strong because we cannot ban wrong things in a democracy.

7. (***e***) Arguments I and II, both strong. If there is ban on the use of pesticides, the whole crop will be damaged by pests and if there is no ban on the use of pesticides, then it will pollute the environment.

8. (***b***) Anything successful in other countries may not succeed in India. However, since English is much widely spoken language in the world today and hence, should be adopted, is a strong idea. Hence, Argument II is the strong argument.

9. (***b***) The first argument is not related directly to the statement. But second argument that teaching religion helps to inculcate moral values among children is strong. Hence, the Argument II is strong.

10. (***d***) None of the argument is strong because both the arguments are based on hypothetical facts.

11. (***d***) None of the arguments is strong.

12. (***d***) Both the arguments are weak. Argument I is weak as it is totally hypothetical. Argument II is irrelevant.

13. (***d***) Both the arguments are weak.

14. (***a***) Argument I is strong because adulteration may cause ill health and death of poor victims.

15. (***d***) None of the arguments is strong. Argument I is weak because if it is operating successfully in Western Countries, it may not necessarily succeed in India *i.e.*, based on example. Argument II is irrelevant.

16. (***d***) None of the arguments is strong. Spending money just because of being rich is not a valid reason. Argument II is weak because it is absolutely illogical that just because of poor performance in international competitions, we should not finance games and sports.

17. (***d***) None of the argument strongly and logically supports the statement.

18. (***b***) Only Argument II is strong because ban on political parties will definitely lead to an end of democracy.

19. (***e***) Both the arguments are logical and directly related to the statement and hence, are strong arguments.

20. (***a***) Argument I is strong as it provides a clear logic and is directly related to statement. Argument II is without logic and hence, is a weak argument.

21. (***b***) Verdict of judge depends on evidences and pleading of advocate, hence Argument I is weak. Argument II is strong as false evidence can mislead the judge.

22. (***e***) Both the arguments are strong.

23. (***a***) Argument I is strong because insurance is meant to cover the risk and promotes savings. Argument II lacks clear logic.

24. (***a***) Argument I is strong because a close companionship bridges the gap between parents and children. Argument II is not supported by a positive logical aspect of the statement and hence, is a weak argument.

25. (*b*) Argument II is strong as cottage industries will definitely solve the problem of unemployment in rural areas. Argument I is not logical.

26. (*d*) Both the arguments are not strong because both the arguments do not contain any logic.

27. (*d*) None of the arguments is strong. Argument I is weak because heavy bag is not related at all with more knowledge. Argument II is weak because heavy bag is also not related with the posture of the children.

28. (*a*) If poor children are loved, cared for and provided with comforts of life, they will definitely respond strongly and positively in terms of respect to their parents. Argument II is not strong.

29. (*a*) Argument I is strong because profession and religion are altogether different. Argument II is irrelevant.

30. (*a*) The second argument that the number of questions to be answered is always very large is very generalised. But the first argument that the assessment of objective test is reliable is a strong argument.

31. (*b*) Argument II is strong. Strike is against the professional ethics is weak argument, but it affects the students adversely, is strong one.

32. (*a*) Argument I is strong because at times media can be responsible for creating hype of a distorted information. Also, Journalists plays an important role in exposing the malfunctioning of the society, so Argument II is also strong. Argument III is strong because it some times leads to harassment of affected person. So, all three statement are strong.

33. (*a*) Only Argument I holds strong because this is definitely not the solution. Arguments II and III are weak arguments.

34. (*a*) All arguments stated do not strongly support the statement because if there are few banks in place of several small banks, then security for investor cannot be ensured. Also, it cannot help to consolidate the entire banking industry.

35. (*c*) Arguments I and II do not provide a strong enough reason for putting up a complete ban on registration of new cars because this is highly discriminatory against the new buyers. So, Argument III is strong argument because it opposes the statement with a strong reason.

36. (*d*) If there is complete ban on genetically modified seeds, it will boost the demand of domestically developed seeds, so Argument I is strong. Argument II is not strong due to the word 'only'. Argument III is strong because genetically modified products will adversely affect the health of those who consume these products.

37. (*a*) None of the given arguments is strong.

38. (*e*) Argument I is not true, so it is weak. Also, Argument II is false because Government has jurisdiction over all exporters. Argument III provides a suitable solution for the problem which can be implemented, hence it is strong.

39. (*e*) In Argument I the use of key word only makes it weak. If there is common syllabus for graduation across the universities, then this will standardise the quality of graduation certificates, which is desirable, hence Argument II is strong. Argument III is also strong as specific requirement and autonomy of the university cannot be overlooked.

40. (*d*) Argument I is definitely strong as this will help a student to avoid one year gap that could occur in his studies. Argument II and III are both correct and hold strong but they contradict each other, so only one can be true.

41. (*e*) Students should take subject of their interest at graduate level. At post-graduate level only interest is not the factor to take subjects. So, Argument I is not strong but II is strong because at post-graduate level, students must fulfill the essential conditions.

42. (*d*) Only Argument III is strong because the standard of examinations and assessment conducted by different boards and universities are not comparable and entrance tests help calibrate them on a common yardstick.

43. (*e*) It cannot be said that a literate person has all round knowledge of politics. So, Argument I is strong. Illiterate person can easily be misled on various factors but voting is also a constitutional right of every citizen. So, Arguments II and III are also strong.

44. (*d*) In 'hire and fire' policy, performing employees are rewarded while non-performing employees are shown the door. This increases the level of efficiency and profitability. So, Arguments I and III are strong while Argument II is not.

45. (*e*) Arguments I and II are strong because a single tax will simplify the tax collection mechanism and manufactures and traders will be benefited by it. What other countries are doing, we should not adopt that blindly. So, Argument III is not strong.

46. (*d*) Arguments I and III are strong. Education is meant for both knowledge and securing a job.

47. (*e*) None of the argument stated provides the strong and convincing reason to support or to oppose the statement given.

48. (*d*) Only Argument III is strong because we can seek any job for which we qualify and stopping an individual from doing this will go against the basic rights of the individual.

49. (*c*) Argument I is not strong as board exams do not provide any criterion to gain more knowledge but they certainly provide a competitive environment to prepare a child to face such exams. Also, it would add an extra burden and pressure on tender aged children and will leave them with less time to play and enjoy. So, Arguments II, III and IV are strong.

50. (*a*) Argument I is strong because it gives more opportunities for the weaker section to grow and reduces the gap between the affluent and the downtrodden. Arguments II, III and IV are vague or they are not strong to support the statement.

2

Statement and Assumptions

Statement is an information or a fact related to any general subject and Assumption is the hidden or unsaid part of the statement. An assumption is said to be hidden because it is generally assumed, supposed and taken for granted.

Different types of questions covered in this chapter are as follows

- One Statement and Two Assumptions Based Problems
- One Statement and Three or More Assumptions Based Problems

When we analyse assumption, we find that when one says or writes something, he does not put everything into words and leaves some part unsaid or unwritten. Why does he do so? He does so because he takes this unsaid part for granted. In other words, he thinks this unsaid part will be understood without saying and there is no need to put this (unsaid part) into words.

There are some special rules related to assumptions which are as follows

(i) Assumption should be a general statement.
(ii) The meaning of assumption should be embedded in the statement.
(iii) Assumption should not be more expandable in comparison to statement.
(iv) There should be no repetition of statement in assumption.
(v) Statement and assumption should be logical to each other.
(vi) Assumption should not be a conclusion on the basis of statement.

Let us think over a situation when a thrilling T-20 cricket match is going on between India and Pakistan at Firozshah Kotla Ground, Delhi. The Pakistani team has scored 200 runs. While chasing this score, India has made 170 runs in 17 overs and now 31 runs are needed in remaining 3 overs to win the match. What is the situation now? This is almost a hopeless situation for Indian cricket fans because required run rate is very high and winning seems an unfulfilled dream. But as Dhoni is batting at this stage, the commentator Ravi Shastri says, “Indian fans should not worry as Dhoni is a big blaster. So, India will win the match.”

Here, Ravi Shastri's comment is divided into two parts

(i) Indian fans should not worry as Dhoni is a big blaster.
(ii) So, India will win the match.

Now, start thinking over these two parts [(i) and (ii)]. How will you relate them? No doubts, you relate them by assuming the following

A big blaster may score 31 runs in 3 overs.

Now, it is clear that comment or argument given by Ravi Shastri has actually three parts out of which two parts have been put into words (clearly said) and one part is hidden (unsaid) as Ravi Shastri assumes that this hidden part will be understood without saying.

Let us see the three parts

(i) Indian fans should not worry as Dhoni is a big blaster. → Clearly said
(ii) A big blaster may score 31 runs in 3 overs. → Hidden or implicit part/assumption
(iii) So, India will win the match. → Clearly said

Hence, we firmly conclude that part (ii), which is hidden in the statement made by Ravi Shastri is a perfect example of an assumption.

Conditions for Invalidity of Assumptions

1. An assumption is said to be invalid, if it has no connection with the given statement.

   e.g.,

   (i) **Statement** Hard labour is required to be perfect in Mathematics.
   Invalid Assumption Hard labour is not required for subjects other than Mathematics.
   Reason Nothing has been said in the statement about other subjects.

   (ii) **Statement** "Get the house painted before Diwali", Ranjana tells her husband Aashutosh.
   Invalid Assumption Aashutosh does not need to do what Ranjana says.
   Reason Infact, somebody says anything to anybody with the assumption that he would be listened to. Hence, the given assumption is invalid as it has no connection with the given statement.

2. An assumption becomes invalid, if it is a restatement of the given statement in different words.

   e.g.,

   Statement Of all the books published by Arihant Publication, book 'A' has the largest sale.

   Invalid Assumption No other book published by Arihant Publication has as high a sale as book 'A'.

   Reason It is clear that the given assumption is not implicit in the given statement. It is a different form of given statement *i.e.,* a restatement.

3. If the given assumption is an obversion of given statement, then the assumption is said to be invalid. In fact, obversion is a slightly different case of restating the same fact. In it, out of subject, verb and predicate, any two are changed into negative which changes the appearance of the sentence without changing its meaning.

   e.g.,

   Statement Beauty is lovable.

   Invalid Assumptions

   I. Ugliness is hateable. II. Ugliness is not lovable. III. Beauty is not hateable.

4. When we study the chapter of syllogism, we find that we convert given statements to get immediate inferences. There are three standard cases of conversion.

   Let us see

   (i) All X are Y $\xrightarrow{\text{Gets converted into}}$ Some Y are X.

   (ii) Some X are Y $\xrightarrow{\text{Gets converted into}}$ Some Y are X.

   (iii) No X are Y $\xrightarrow{\text{Gets converted into}}$ No Y are X.

Point to be noted that the given assumptions will be invalid, if they are such conversions.

e.g.,

(i) **Statement** Some cats are dogs.
Invalid Assumption Some dogs are cats.

(ii) **Statement** Some politicians harm the society by distorting facts.
Invalid Assumption Some of those who distorts facts and harm society are politicians.

5. An assumption is said to be invalid, if it is an inference derivable from the given statement. Remember that an assumption is something on which the statement is based while an inference of a statement is based upon the statement.

   e.g.,

   Statement Sanjeev went to Kolkata on 15th February and Babita went 4 days after him.

   Invalid Assumption Babita went Kolkata on 19th February.

6. Sometimes a given assumption appears to be probably correct but is declared invalid as it makes too far fetched reasoning or long drawn conclusions.

   e.g.,

   Statement All teaching should be done in religious spirit because religious instruction leads to a curiosity for knowledge.

   Invalid Assumption Curious persons are good persons.

   Reason It is too long drawn to come to the conclusion that religious instructions lead to curiousity and religious people are generally good and therefore curious persons must be good.

Use of Specific Words

1. **Definitive words case** Let us consider some of the keywords like 'only', 'best', 'certainly', 'strongest', 'all' etc. Such words put a greater degree of emphasis on the sentence, they give a certain type of exclusiveness to the sentence which reduces the range or scope of the sentence. Point to be noted that all these words have some kind of certainty associated with them.

   Following examples will give a better understanding about this chapter

Ex **1** **Statement** Government should take every effort to boost sugar import as its crisis has worsened.

Assumptions
I. Imports are the best solution to avert the sugar crisis.
II. Imports are a reasonably good solution to avert the sugar crisis.
III. Import are the only solution to overcome the sugar crisis.
IV. The sugar crisis will definitely be averted by boosting imports.
V. The sugar crisis will probably be averted by boosting imports.

Sol. Valid Assumptions—II and V.

Invalid Assumptions I, III, and IV. Point to be noted that I, III and IV are invalid because of the use of definitive words (best, only and definitely). In fact, the given statement mentions that sugar crisis has worsened and then makes a suggestion that sugar import should be boosted. In true sense, the given statement assumes that import should help to overcome sugar crisis. It means, export is a good/reasonable solution to the sugar crisis. But there is no hint in the given statement which compels us to conclude that import is the only/best/definitely effective solution.

2. **Cases of conjunction** If a statement has two clauses and the given clauses are linked by a conjunction, then the nature of conjunction helps in detecting assumptions. Such conjunction may be 'as', 'because', 'so', 'hence', 'therefore', 'despite', 'in spite of', 'even', 'after', 'although', 'as a result of' etc.

Ex **2** **Statement** The Indian batsman Sachin Tendulkar is the highest run getter in the history of international cricket, therefore all Indians must be very proud.

Valid Assumption An achievement by a fellow country man makes other citizens proud.

Sol. In the given statement, the conjunction is 'therefore' which attaches two parts of the given statement. Before the conjunction 'therefore', the I part (the main event) is given while the II part (the conclusion part) is given after the conjunction 'therefore'. The conjunction 'therefore' confirms that II part of the statement is the conclusion which suggests that given assumption is implicit in the given statement.

Ex **3** **Statement** You will find improvement in your logical ability after reading a reasoning book published by Arihant Publication.

Valid Assumption A reasoning book may help in improving logical ability.

Sol. In the given statement the conjunction is 'after' which helps us is reaching the conclusion that the given assumption is hidden or implicit in the given statement.

Ex **4** **Statement** The city mall was looted last night in spite of the maximum security arrangement made by the police.

Valid Assumption Maximum security arrangement is usually sufficient to prevent such mishappenings.

Sol. Here, conjunction is 'in spite of'. With the help of this conjunction, it is easy to read between the lines. 'In spite of' gives the sentence a meaning that suggests, if maximum security arrangement is available, then the looters should not have been successful in their mission. This is the meaning of given statement which hints towards the validity of given assumption.

Other conjunctions ('as' 'as a result of', 'although', 'because', 'even after', 'so', 'despite' etc.) may also be seen in the statements.

Rules Related to Assumptions

1. If A says something to B, it means A assumes that B will hear what he (A) says.

   Reason When we say something, we expect we will be heared. Without expecting so, there is no purpose of saying anything to anyone.

   e.g.,

   Statement 'A book of reasoning published from Arihant Publication will help you a lot in preparing for Bank PO exams', Vandana advices Aarti.

   Valid Assumption Aarti will pay attention towards Vandana's advice.

2. Any form of advertisements are given by assuming that people will respond to such materials.

   Reason The purpose of such materials is getting response from targeted mass. Therefore, without assuming response from targeted mass, any kind of advertisement is of no use.

   e.g.,

   Statement A new approach to reasoning, a magical book by Arihant Publication that gives exclusive materials on reasoning-an advertisement.

   Valid Assumption The advertisement have some effect on those who read it.

3. Any form of public interest notice/official notice is assumed to be paid attention to.

   Reason The purpose of such notice is to benefit the people/organisation and its ignorance may be harmful. Therefore, it is the duty of authorities to issue such notices.

   e.g.,

   Statement The civic authorities have advised the residents in the area to use mosquito repellents or sleep inside nets as large number of people are suffering from malaria.

   Valid Assumption People will pay attention to such notice.

   e.g.,

   Statement From the month of January next year, it is compulsory for every employee to submit a daily report, a notice issued in an organisation.

   Valid assumption Employees will read the notice.

4. If an appeal is made, it is assumed that the appeal will get response.

   Reason An appeal is made only when we expect a desired result from it. Why will we make an appeal when we do not expect a positive response? Therefore, we make an appeal with a thinking that the desired purpose will be fulfilled through it.

   e.g.,

   Statement Donate money, clothes and food items for the victims of earthquake, an appeal.

   Valid Assumption The appeal will have some effect on people.

5. A single statement can have more than one assumptions. Let us consider the statement given in the example of A.

   Statement 'A book of reasoning published by Arihant Publication will help you a lot in preparing for Bank PO exams', Vandana advices Aarti.

   Valid Assumptions

   (i) Aarti will pay attention towards Vandana's advice.
   (ii) Vandana knows the quality of reasoning book published from Arihant Publication.

Mainly two types of questions are asked from Statement and Assumptions, which are discussed as under

Type 1 One Statement and Two Assumptions Based Problems

In this type of problems, a statement is given which is followed by two assumptions. The candidate is required to analyse the given statement and then decide which of the given assumptions is implicit in the statement.

Directions (Example Nos. 5-16) In each of the questions below is given a statement followed by assumptions numbered I and II. Consider the statement and decide which of the given assumptions is implicit.

Give answer
(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if both I and II are implicit
(d) if neither I nor II is implicit

Ex **5** **Statement** The book published by Arihant Publication is intended to guide the layman to study reasoning in the absence of a teacher.

Assumptions I. Reasoning can be learnt with the help of a book.
II. A teacher of reasoning may not be available to everyone.

Sol. (c) It is given in the statement that the book intends to teach reasoning which implies that I is a valid assumption. Further, the statement says that the book is intended to teach reasoning in the absence of a teacher. This means that the absence of a teacher is a possibility. Hence, II is also valid.

Ex **6** **Statement** Get your child examined by a specialist doctor, X tells Y.

Assumptions I. Y will not listen what X tells to him.
II. Y will hear X's advice.

Sol. (*b*) We advice anybody with the assumption that our advice will be listened to. Why will we advice someone with a thinking that our advice will not be heard? While saying something, we go with a positive frame of mind that the targeted people will hear and pay attention towards our point of view. Hence, II is a valid assumption but I is not.

Ex **7** **Statement** Patient's condition would improve after this operation.

Assumptions I. The patient can be operated upon in this condition.
II. The patient cannot be operated upon in this condition.

Sol. (*a*) It is very much implied in the statement that the patient is in a position to be operated upon. Therefore, Assumption I is implicit.

Ex **8** **Statement** The best evidence of India's glorious past is the growing popularity of Ayurvedic medicines in West.

Assumptions I. Ayurvedic medicines are not popular in India.
II. Allopathic medicines are more popular in India.

Sol. (*d*) The statement given in the question states only about the place which Ayurvedic medicine had occupied in the past on account of its increasing popularity in West and this signifies neither non-popularity of Ayurvedic medicines in India nor speaks of popularity of Allopathic medicines. Hence, none of the assumptions is implicit in the statement.

Ex **9** **Statement** The boy is too clever to fail in the examination.

Assumptions I. The boy is appearing in a competitive examination.
II. Very clever boys do not fail in the examination.

Sol. (*b*) Assumption I is not valid as it has no connection at all with the given statement. Statement does not specifically say about competitive examination. But II is valid because the statement says that the boy would not fail (effect) because he is very clever (cause). Obviously, it is assumed that very clever boys do not fail.

Ex **10** **Statement** It is faster to travel by air to Delhi from Patna.

Assumptions I. Patna and Delhi are connected by air.

II. There are no other means of transport available to Delhi from Patna.

Sol. (*a*) The given statement advises to travel by air between Delhi and Patna. Hence, no doubts, I is implicit. II is the contrary to the given statement. 'It is faster to travel by air' does mean that other means of transport, slower than air transport, are available. Therefore, II is not implicit.

Ex **11** **Statement** Most of the classical dance themes are based on stories of Gods and Avatars.

Assumptions I. Classical arts maintain their heritage by sticking to traditions.

II. New themes are not interesting.

Sol. (*a*) Stories of Gods and Avatars carry the reflection of our tradition. Therefore, the statement implies that the classical arts endeavor to maintain their heritage by sticking to traditions. Hence, Assumption I is clearly implicit. But it is not given anywhere in the statement that new themes are not interesting. Therefore, Assumption II is not implicit.

Ex **12** **Statement** The anti-reservation movement was taken up by all the states. **[Andhra Bank (PO) 2010]**

Assumptions I. If one state starts a movement, it is customary for the other states to follow it.

II. A major portion of the youths and employees all over the country were not in favour of reservation.

Sol. (*b*) The anti-reservation movement could get acceptability by all the states only because major portion of the youths and employees were not in favour of reservation. Our statement is not based on the assumption that it becomes customary for the other states to follow a movement started by one state. Therefore, only Assumption II is implicit.

Ex **13** **Statement** "If you want to give any advertisement, give it in newspaper 'X' "– A tells B.

Assumptions I. B wants to publicise his products.

II. Newspaper 'X' has a wide circulation.

Sol. (*b*) The word 'if' in the statement implies that B may or may not be willing to publicise his products. Statement further suggests that advertisement should be given in newspaper 'X'. This means that 'X' will help advertise better. In other words, newspaper 'X' has a wide circulation. So, only Assumption II is implicit.

Ex **14** **Statement** If Dinesh has finished reading the instructions, then let him begin the activities accordingly.

Assumptions I. Dinesh would understand the instructions.

II. Dinesh is capable of performing the activities.

Sol. (*c*) The statement implies very clearly that Dinesh has been asked to begin his activities as per instructions. This means that Dinesh would understand the instructions and also is capable of performing the activities. Hence, both the assumptions are implicit.

Ex **15** **Statement** Of all the cars manufactured in India, 'A' brand has the largest sale. **[Syndicate Bank (PO) 2009]**

Assumptions I. The sale of all the cars manufactured in India is known.

II. The manufacturing of no other cars in India is as large as 'A' brand.

Sol. (*a*) Unless the sale of all cars manufactured in India was known, the statement could not have been made. Hence, I is a valid assumption. II is not implicit as we do not know about manufacturing, we know only about sales. 'A' brand has the largest sale but it may not be the largest manufacturer of cars. May be 'B' company manufactures more cars than 'A' does but it exports all its cars. In that case 'B' is a bigger manufacturer but its sale in India would be lesser than that of 'A'.

Ex **16** **Statement** Buy pure milk of company 'X', an advertisement in a newspaper.

Assumptions I. No other company supplies pure milk.

II. People read advertisements.

Sol. (*b*) I is definitely not mentioned in the advertisement. II is implicit, otherwise company 'X' would not have given the advertisement.

Practice Corner **2.1**

Build your Confidence...

Directions (Q. Nos. 1-15) In each of the questions below, is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the assumptions and decide which of the assumption(s) is/are implicit in the statement.

Give answer

(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if either I or II is implicit
(d) if neither I nor II is implicit
(e) if both I and II are implicit

1. Statement Want to be a PO? Get admission into institute 'M', A tells B.

Assumptions

I. B will hear A's advice.
II. A knows about M institute.

2. Statement The next meeting of the governing body of the Arihant Publication will be held after one year.

Assumptions

I. There will be no meeting before one year.
II. Arihant Publication will remain in function after one year.

3. Statement Please do not lean out of the running bus, a notice in a tourist bus.

Assumptions

I. Leaning out of running bus is dangerous.
II. The passengers are likely to pay attention to this notice.

4. Statement 'A' computer, the largest selling name with the largest range, an advertisement.

Assumptions

I. 'A' computer is the only one with the wide variations.
II. There is a demand for computers in the market.

5. Statement The Government has decided to provide monetary relief to the farmers in the drought hit areas.
[Andhra Bank (PO) 2007]

Assumptions

I. The farmers of the affected areas may accept the Government relief.
II. The Government machinery may be able to reach the affected farmers to provide relief.

6. Statement Everybody loves reading adventure stories.

Assumptions

I. The adventure stories are the only reading materials.
II. Nobody loves reading any other material.

7. Statement Even with the increase in the number of sugar factories in India, we still continue to import sugar.

Assumptions

I. The consumption of sugar per capita has increased in India.
II. Many of the factories are not in a position to produce sugar to their fullest capacity.

8. Statement "You must learn to refer to a dictionary, if you want to become a good writer". A advises B.

Assumptions

I. Only writers refer to the dictionary.
II. All writers, good or bad, refer to the dictionary.

9. Statement If it does not rain throughout this month, most farmers would be in trouble this year.

Assumptions

I. Timely rain is essential for farming.
II. Most of the farmers are generally dependent on rains.

10. Statement A advises B, "If you want to study English, join institute'Y' ".

Assumptions

I. 'B' listens to A's advice.
II. Institute 'Y' provides good coaching for English.

11. Statement The leader of the main opposition party asserted that the call for chakka jam turned out to be a great success in the entire state.

Assumptions

I. The people in future will support the main opposition party.
II. People probably are convinced about the reason behind the chakka jam strike call.

12. Statement Government aided schools should have uniformity in charging various fees.

Assumptions

I. The Government's subsidy comes from money collected by way of taxes from people.
II. The Government, while giving subsidy, may have stipulated certain uniform conditions regarding fees.

13. Statement Unemployed allowance should be given to all unemployed Indian youths above 18 yr of age.

Assumptions (RPSC 2013)

I. There are unemployed youths in India who need monetary support.

II. The Government has sufficient funds to provide allowance to all the unemployed youth.

14. Statement Please consult before making any decision on exports from the company.

Assumptions

I. You may take a wrong decision, if you don't consult me.

II. It is important to take a right decision.

15. Statement Postal rates have been increased to meet the deficit. [NIFT (UG) 2013]

Assumptions

I. The present rates are very low.

II. If the rates are not increased, the deficit cannot be met.

Directions (Q. Nos. 16-20) Each of these questions has a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. Consider the statement and the following assumptions. [NIFT (UG) 2012]

Give answer

(a) if Assumption I is implicit
(b) if Assumption II is implicit
(c) if either Assumption I or II is implicit
(d) if neither Assumption I nor II is implicit

16. Statement The KLM company has decided go for tax-free and taxable bonds to raise its resources.

Assumptions

I. The KLM company has already explored other sources to raise money.

II. The products of KLM company have little competition in the market.

17. Statement It is felt that when the airline is facing stiff competition coupled with a precarious financial position, the top level posts should be kept open for outside professionals rather than internal candidates.

Assumptions

I. Internal candidates aspire only for getting promotions, without much contribution.

II. Experienced professionals are more likely to handle the problems of the airline.

18. Statement Lack of stimulation in the first four five years of life can have adverse consequences.

Assumptions

I. A great part of the development of observed intelligence occurs in the earliest years of life.

II. 50% of the measurable intelligence at the age of 17 is already predictable by the age of four.

19. Statement Take this 'oven' home and you can prepare very tasty dishes which you were unable to prepare earlier-an advertisement of X brand oven.

Assumptions

I. The user knows the recipes of tasty dishes but does not have the proper oven to cook.

II. Only 'X' brand oven can cook very tasty dishes.

20. Statement Who rises from the prayer a better man, his prayer is answered.

Assumptions

I. Prayer makes a man more human.

II. Prayer atones all of our misdeeds.

Directions (Q. Nos. 21-25) In each question below is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumption(s) is/are implicit in the statement. [NABARD (PO) 2010]

Give answer

(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if either Assumption I or II is implicit
(d) if neither Assumption I nor II is implicit
(e) if both Assumptions I and II are implicit

21. Statement A leading university has begun a practice of displaying results only on the Internet rather than on the main notice boards.

Assumptions

I. All the students enrolled with the university have access to Internet at home.

II. Most of the students referred to the result displayed on both the internet as well as the notice boards earlier.

22. Statement In order to replenish the nutrients in the soil, it is important to grow different types of crops every alternate season.

Assumptions

I. A crop can never be grown for the second time in the same field.

II. If a different crop is grown in the successive season, no additional nutrients such as fertilizers are required to be added to the soil.

23. Statement If farmers want to improve their yield, they must use organic fertilizers in place of chemical fertilizers.

Assumptions

I. Chemical fertilizers have certain ill effects on health.

II. Chemical fertilizers do not produce as much yield as the organic fertilizers.

24. Statement Store eatables in the deep freeze in order to preserve these for a long time.

Assumptions

I. Food material remains eatable even after deep freezing for a long time.

II. It is not possible to store any eatable at room temperature even for a shorter period of time.

25. Statement A leading NGO decided to open a library containing books and newspapers of all major publishers in a remote village.

Assumptions

I. All other nearby villages already have similar libraries.

II. There is adequate number of literate people in the village.

Directions (Q. Nos. 26-30) In each question below, is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumptions is implicit in the statement. **[Syndicate Bank (PO) 2010]**

Give answer

(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if either Assumption I or II is implicit
(d) if neither Assumption I nor II is implicit
(e) if both Assumptions I and II are implicit

26. Statement Banks should always check financial status before lending money to a client.

Assumptions

I. Checking before lending would give a true picture of the client's financial status.

II. Clients sometimes may not present the correct picture of their ability to repay loan amount to the bank.

27. Statement The Government has decided to run all commercial vehicles on bio-fuels in order to save the depleting fossil fuel reserves.

Assumptions

I. It is possible to switch over from fossil fuels to bio-fuels for vehicles.

II. Sufficient amount of bio-fuel can be produced in the country to run all commercial vehicles.

28. Statement To save the environment enforce total ban on illegal mining throughout the country.

Assumptions

I. Mining which is done legally does not cause any harm to the environment.

II. Mining is one of the factors responsible for environmental degradation.

29. Statement Give adequate job related training to the employees before assigning them full-fledged work.

Assumptions

I. Training helps in boosting the performance of employees.

II. Employees have no skill sets before training is provided to them.

30. Statement Take a ferry or a boat instead of a bus to reach the Kravi islands faster.

Assumptions

I. The islands being in remote location are not easily accessible.

II. Ferries and boats are available to travel to Kravi islands.

Directions (Q. Nos. 31-48) In each of the questions below, is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted, you have to consider the statement and the assumptions and decide which of the assumption(s) is/are implicit in the statement.

Give answer

(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if either Assumption I or II is implicit
(d) if neither Assumption I nor II is implicit
(e) if both Assumptions I and II are implicit

31. Statement Detergent should be used to clean clothes.

Assumptions

I. Detergents form more lather.
II. Detergents help to dislodge grease and dirt.

32. Statement "Private property, trespassers will be prosecuted", a notice on a plot of land.

Assumptions

I. The passerby may read the notice and may not trespass.
II. The people are scared of prosecution.

33. Statement All the students of a school were instructed by the principal to reach school atleast 15 min before the stipulated time for the coming month. **[Andhra Bank (PO) 2007]**

Assumptions

I. The parents of the students of the school may protest against the principal's instruction.
II. The parents may request the principal to withdraw the instruction.

34. Statement "To keep myself up-to-date, I always listen to prime time news on television", A candidate tells the interview board. **[RRB 2009]**

Assumptions

I. The candidate does not read newspaper.
II. Recent news are broadcast only on television.

35. Statement Every year doctors, scientists and engineers migrate from India to greener pastures.

Assumptions

I. Brain-drain has affected India adversely.
II. Better scales and better standards of living act as a bait to lure them.

36. Statement The Government is making efforts to boost tourism in Jammu and Kashmir.

Assumptions

I. Tourism in Jammu and Kashmir dropped during last couple of years.
II. Special discount in the railway fare has been announced.

37. Statement If you don't get desired response to your fund raising campaign through the routine advertisements, appeal to the public's regional sentiments.

Assumptions

I. It is desirable to adopt alternative strategy in case the response to the first fund raising strategy is lukewarm.
II. People contribute in terms of money, if proper appeals are made.

38. Statement If you don't get desired response to your fund raising campaigns through the routine advertisements, appeal to the public's regional sentiments.

Assumptions

I. People in general nurture regional sentiments.
II. Nobody bothers to read advertisements in the newspaper.

39. Statement Government should deploy army to rehabilitate the people displaced due to earthquake.

Assumptions

I. Army can be used for purposes other than war also.
II. Only army can rehabilitate the displaced victims of earthquake.

40. Statement The Government should deploy army to rehabilitate the people displaced due to earthquake.

Assumptions

I. Army should be entrusted with activities other than war to give them enough experience.
II. Rehabilitation of earthquake victims is obligatory for the Government.

41. Statement The police in India have to cope with tremendous stress and strain, while maintaining security and order.

Assumptions

I. In other countries, the police don't have to undergo stress and strain while doing their duties.
II. The police are expected to do their duties without stress and stain.

42. Statement There is no shopping complex for this colony, people have to go to the main market.

Assumptions

I. This colony may be far from main market.
II. The people don't want to go to the main market.

43. Statement If children are to manage our world in future, then they need to be equipped to do so.

Assumptions

I. The world has always educated children.
II. It is possible to educate children.

44. Statement The cotton crop continues to be poor even after the introduction of improved variety of cotton seeds.

Assumptions

I. The yield of cotton was expected to increase after introduction of improved variety of seeds.
II. The yield of cotton was adequate before the introduction of new variety of seeds.

45. Statement No budgetary provision for the purpose of appointing additional faculty would be made in the context of Institute's changed financial priorities.

Assumptions

I. Appointment of faculty requires funds.
II. There are areas other than appointment of faculty which require more financial attention.

46. Statement The new educational policy envisages major modifications in the education system. **[SSC (CPO) 2007]**

Assumptions

I. Present educational system is inconsistent with national needs.
II. Present educational system needs changes.

(a) Only Assumption I is implicit
(b) Only Assumption II is implicit
(c) Neither Assumption I nor II is implicit
(d) Both Assumptions I and II are implicit

47. Statement Politicians become rich by the votes of the people. **[SSC (CGL) 2010]**

Assumptions

I. People vote to make politicians rich.
II. Politicians become rich by their virtue.

(a) Only Assumption I is implicit
(b) Only Assumption II is implicit
(c) Both Assumptions I and II are implicit
(d) Both Assumptions I and II are not implicit

48. Statement Theoretical education does not bring in economic advancement and it lends to a steady loss of confidence and money in the country.

Assumptions

I. There is close relationship between development of confidence and economic development.
II. Theoretical education makes priceless contribution for development of confidence.

(a) Only Assumption I is implicit
(b) Only Assumption II is implicit
(c) Both Assumptions I and II are implicit
(d) Both Assumptions I and II are not implicit

Directions (Q. Nos. 49-50)

In each of the following questions one statement is given followed by two Assumptions I and II. You have to consider the statement to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given assumptions, if any, follow from the given statement.

49. Statement He is too industrious to be poor. **[SSC (Steno) 2010]**

Assumptions

I. Very industrious people also can be poor.
II. Very lazy people can also be rich.

(a) Only Assumptions I is implicit
(b) Only Assumptions II is implicit
(c) Both Assumptions I and II are implicit
(d) Neither Assumptions I nor II is implicit

50. Statement If people are intelligent they should be creative. **(SSC (CGL) 2013)**

Assumptions

I. Creativity and intelligence are related.
II. Creative people are intelligent.

(a) Both Assumptions I and II are invalid
(b) Only Assumption I is valid
(c) Only Assumption II is valid
(d) Both Assumptions I and II are valid

Directions (Q. Nos. 51-55)

In each question below, is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumption (s) is / are implicit in the statement. **[Punjab & Sindh Bank (PO) 2010]**

Give answer

(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if either Assumption I or II is implicit
(d) if neither Assumption I nor II is implicit
(e) if both Assumptions I and II are implicit

51. Statement A very large number of people stood in the queue for buying tickets for the one day international cricket match scheduled to be played in the city on the next day.

Assumptions

I. No other one day international cricket match may be played in the city for the next six months.

II. Majority of those who stood in the queue may be able to get ticket for the one day international cricket match.

52. Statement The highway police authority put up large boards at regular intervals indicating the speed limit and dangers of over speeding on the highways.

Assumptions

I. Most of the motorists may drive their vehicles within the speed limit on the highways.

II. Motorists generally ignore such cautions and over speed on the highways.

53. Statement The employees association urged its members to stay away from the annual function as many of their demands were not met by the management.

Assumptions

I. Majority of the members of the association may not attend the function.

II. The management may cancel the annual function.

54. Statement The sarpanch of the village called a meeting of all the heads of families to discuss the problem of acute shortage of drinking water in the village.

Assumptions

I. The sarpanch had earlier called such meetings to discuss about various problems.

II. Most of the heads of families may attend the meeting called by the sarpanch.

55. Statement The municipal corporation advised all the people living in the shanties along the beaches to move to higher places during monsoon.

Assumptions

I. Many people living in the shanties may leave the city and relocate themselves elsewhere in the state.

II. Majority of the people living in the shanties along the beach may try to relocate to higher places during monsoon.

Directions (Q. Nos. 56-57) In each question below a statement has been given followed by two assumptions shown as I and II. You have to decide which assumption exists in the statement and answer accordingly as follows.

Give answer

(a) if only Assumption I exists in the statement
(b) if only Assumption II exists in the statement
(c) if either Assumption I or II exists in the statement
(d) if both Assumptions I and II exist in the statement

56. Statement Inculcate saving habit in your school going child.

Assumptions

I. Saving habit is expected.

II. Good habits should be inculcated from the childhood.

57. Statement The root cause of all social evils is love for wealth.

Assumptions

I. Wealth gives power and makes selfish.

II. All those who love wealth are anti-social.

Directions (Q. Nos. 58-62) In each question below is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumption(s) is/are implicit in the statement. **[Canara Bank (PO) 2009]**

Give answer

(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if either Assumption I or II is implicit
(d) if neither Assumption I nor II is implicit
(e) if both Assumptions I and II are implicit

58. Statement Even though the number of sugar factories is increasing at a fast rate in India, we still continue to import it from other countries.

Assumptions

I. Even the increased number of factories may not be able to meet the demand of sugar in India.

II. The demand for sugar may increase substantially in future.

59. Statement The Government announced a heavy compensation package for all the victims of the terrorist attacks.

Assumptions

I. Such incidents of terror may not occur in near future.
II. Compensation may mitigate the anger among the citizens against the current Government.

60. Statement Many organisations have switched over to online mode of examinations.

Assumptions

I. Candidates from all parts of the country may be well versed using computers.
II. Online mode of examinations helps in recruiting more capable personnel.

61. Statement Government has decided to relocate all the factories from the city with immediate effect to reduce pollution.

Assumptions

I. Pollution in the city is being caused only because of the factories existing there.
II. People may be able to manage travelling daily to the relocated factories.

62. Statement Gambling through lotteries is banned by the Central Government in all the states with immediate effect.

Assumptions

I. This may save innocent citizens from getting cheated of their hard earned money.
II. The citizens may not gamble in any other way, if the lotteries are banned.

Directions (Q. Nos. 63-64) Each of these questions, given below consists of a statement followed by two assumptions numbered as I and II. Decide which of the assumption (s) is /are implicit from the statement and then decide which of the answer is correct. **[NIFT (UG) 2013]**

Give answer

(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if neither Assumption I nor II is implicit
(d) If both Assumptions I and II are implicit

63. Statement Most people who stop smoking gain weight.

Assumptions

I. If one stops smoking, one will gain weight.
II. If one does not stop smoking, one will not gain weight.

64. Statement Warning : Smoking is injurious to health.

Assumptions

I. Non-smoking promotes health.
II. Really, this warning is not necessary.

Directions (Q. Nos. 65-68) In each of the questions below, a statement is followed by two assumptions numbered I and II. Consider the statement and the assumptions given to decide which of the assumption(s) is/are implicit in the statement. **[MAT 2006]**

Give answer

(a) if only Assumption I is implicit
(b) if either Assumption I or II is implicit
(c) if only Assumption II is implicit
(d) if neither Assumption I nor II is implicit

65. Statement Like a mad man, I decided to follow him.

Assumptions

I. I am not a mad man.
II. I am a mad man.

66. Statement If it is easy to become an engineer I do not want to be an engineer.

Assumptions

I. An individual aspires to be a professional.
II. One desires to achieve a thing which is hard earned.

67. Statement All the employees are notified that the organisation will provide transport facilities at half the cost from the nearby railway station to the office except for those who have been provided with travelling allowance.

Assumptions

I. Most of the employees will travel by the office transport.
II. Those who are provided with travelling allowance will not read such notice.

68. Statement An advertisement of a bank "Want to open a bank account! Just dial our 'home service' and we will come at your doorsteps".

Assumptions

I. There is a section of people who require such service at their home.
II. Now-a-days banking has become very competitive.

Response & Interpretations (2.1)

1. (*e*) Assumption I is implicit as we say something to anybody with the assumption that we will be listened to. Assumption II is implicit because without knowing about a particular institute, how can we suggest anybody to get admission into it.
2. (*b*) Assumption I is invalid because it has no connection with the given statement. The statement clearly says about meeting of governing body and not about any other meeting. Assumption II is valid as only those bodies that are functional hold meetings. So, if it is announced that next meeting will be held after one year, the announcers must be assuming that the institute will remain functional after one year.
3. (*e*) 'Do not lean out' implies that this act can be dangerous. Hence, Assumption II is implicit. The purpose of a notice is getting response from targeted mass. Therefore, without assuming response from targeted mass, there will be no such notice. Clearly, Assumption II is also valid.
4. (*b*) Assumption I is not implicit because of the word 'only'. 'A' computer has the largest range. But this does not mean that it is the only brand to have a wide range. In case of Assumption II, it is a truth that if computers are being advertised, a demand for them must be existing. Hence, Assumption II is implicit.
5. (*e*) It is the plan of the Government to provide a relief to the farmers. It means the Government must be assuming that the plan can be executed. Infact the objective cannot be fulfilled without Assumptions I and II. Hence, both I and II are implicit.
6. (*d*) Both the statements have no connection with the given statement. Assumption I becomes disconnected because of the word 'only' while Assumption II is rubbish as the statement does not say anything about reading materials other than adventure stories. Hence, Assumptions I and II both are invalid.
7. (*d*) None of the assumptions is implicit in the statement as there may be various reasons for the same.
8. (*d*) None of the assumptions is implicit as nothing can be said definitely.
9. (*e*) Since the statement speaks of the essentiality and requirement of rain for farmers, hence both the assumptions are implicit in the statement.
10. (*e*) Since, A advises B to join institute 'Y' to study English, hence it is assumed that institute 'Y' provides good coaching for English. Secondly, it is also assumed that B listens to A's advice.
11. (*b*) Since, the chakka jam call was accepted by and large in the entire state, it is very likely that people are convinced about the reasons behind the chakka jam strike call. However, it is not necessary that people will support the main opposition party in future without any strong and valid reasons.
12. (*b*) Assumption I is not related with the statement, hence it is not implicit in the statement. Assumption II is implicit as it gives the solid base for the fact defined in the statement.
13. (*a*) Assumption I that Indian unemployed youths need monetary support is the solid base for providing allowances to all the unemployed youths. However, Assumption II that the Government has sufficient funds does not give valid reason. Hence, only Assumption I is implicit.
14. (*e*) It is directed in the statement that consultation is necessary before making any decision on the export. It is, therefore, assumed that person directed may take a wrong decision. Secondly, it is assumed in the light of the statement that it is important to take a right decision.
15. (*d*) On the basis of statement, it is not certain that present rates are very low. We cannot say that increasing the rates is the only way to meet the deficit. Hence, none of the assumptions is implicit.
16. (*a*) Only Assumption I follows.
17. (*b*) Experienced professionals are more likely to handle the professional hurdles.
18. (*b*) Assumption II is implicit.
19. (*d*) To cook good food there is no need to have a good oven or any other materialistic things. The only thing is skill.
20. (*b*) Both the statements follow, as the faith in the prayer and good deeds lead the person towards success.
21. (*d*) Assumption I is invalid as the assumption is that the students have access to the internet. But it is not necessary that they have this access at home. Further, past practice may not have been borne in mind while switching over to internet only display. Hence, Assumption II is also invalid.
22. (*d*) Assumption I is not implicit as it has no connection with the given statement. The need to grow different types of crops is talked about precisely because there is a likelihood of farmers growing the same crop again and again unless instructed. Further, growing different types of crops is important but not sufficient. Therefore, Assumption II is also not valid.
23. (*b*) Assumption I is invalid as the given statement does not focus on health. The sentence 'If farmers want to improve their yield' proves that Assumption II is hidden in the given statement because the word 'improve' itself hints towards the increase of production. Hence, Assumption II is implicit.
24. (*a*) Assumption I must be valid because only then does the storage make sense. Further, the statement has nothing to do with "a shorter period of time". Hence, Assumption II is invalid.

25. (*b*) Assumption I is not implicit as it has no relation with the given statement. The statement does not give any information about other villages. Further literacy is necessary for a library to be successful. Hence, II is implicit.

26. (*a*) Assumption I is implicit in the norm prescribed in the statement. This is the reason why checking is being advised. However, II is vague. If cross checking is what the speaker has in mind, II would become implicit.

27. (*a*) Assumption I is implicit. The reason is that if the Government has taken such a decision, it must have assumed that its implementation would be possible. Assumption II is not implicit because on the basis of given statement it cannot be said with surety that sufficient amount of bio-fuel can be produced in the country. It is possible that the Government has import on its mind for the said purpose.

28. (*b*) Assumption I is invalid because it is not implied that legal mining does not harm and illegal mining does all harm. It is only implied that illegal mining is more harmful for the environment. This happens because in illegal mining norms are flouted with impurity. Only a look on Assumption II gives the idea that it is very much implied in the given statement.

29. (*a*) No doubts, Assumption I is implicit in the need for training but what happens in case of II? It takes things to an extreme with the phrase "no skill sets". Hence Assumption II is an invalid assumption.

30. (*b*) Assumption I is not implicit as there may be several reasons for the preference being stated (taking a ferry or a boat). Assumption II is very much valid because we ask someone to employ a means only when we assume the availability of that particular means.

31. (*b*) Assumption I is not implicit because nothing is mentioned about the lather formation by the detergent. Further, detergents should be used as they clean clothes better and more easily. Hence Assumption II is implicit.

32. (*e*) Any notice is displayed assuming that it will get desired response from targeted mass. Hence, Assumption I is implicit. Assumption II is also implicit as the notice threatens any trespassers to be prosecuted.

33. (*d*) Point to be noted that, if a person instructs an individual or a group of people, the former assumes that the latter will abide by it. The principal must be assuming the same. Hence, Assumption I is not implicit. Again, Assumption II is no implicit as it has no connection with the given statement.

34. (*d*) Assumption I is not implicit as the candidates listening to news on the television does not mean that he does not read newspaper. Assumption II is also invalid because of the word 'only'. The word 'only' disconnect Assumption II from he given statement.

35. (*b*) The statement is based on the assumption that lucrative offers tempt the scientists to migrate abroad. Hence, only Assumption II is implicit.

36. (*a*) The Government is making efforts to boost tourism in Jammu and Kashmir on the assumption that tourism in Jammu and Kashmir dropped during last couple of years. Therefore, Assumption I is implicit in the statement.

37. (*e*) It is advised in the statement to appeal to the people's regional sentiments, if the desired response to fund raising campaign is not achieved. It is therefore assumed that it is desirable to adopt alternative strategy in case the response to the first fund raising strategy is lukewarm. At the same time, it is also assumed that people contribute in terms of money. Hence, both the assumptions are implicit in the statement.

38. (*a*) It is assumed in the light of statement that people nurture regional sentiments. Assumption II is not implicit because fund raising is also expected from appeal through advertisements.

39. (*a*) It is given in the statement that the Government should be deployed to rehabilitate people which means that army can be used for purposes other than war. Hence, Assumption I is implicit. The word 'only' makes the assumption baseless.

40. (*b*) Army is being used as alternate course of action which otherwise is meant for war purpose only. Hence, Assumption I that works other than war will give enough experience to army, is not implicit. Secondly, 'rehabilitation is obligatory for Government' is the correct assumption.

41. (*d*) Statement does not compare Indian police with the police of any other country, hence, Assumption I is not implicit in the statement. Secondly, it is not proper to assume in the light of statement that police are expected to do their duties without stress and strain. Hence, none of the assumptions is implicit.

42. (*a*) Assumption I is clearly implicit in the statement. Assumption II is not implicit in the statement because people's wish to go to the main market is not related with the statement.

43. (*d*) None of the assumptions is implicit in the statement.

44. (*a*) Improved variety of cotton seeds has been used in anticipation of good crop. Hence, Assumption I is implicit in the statement. Clearly, Assumption II is not implicit in the statement.

45. (*e*) It is clear that appointment of faculty requires funds, that is why it has been stated that no budgetary provisions will be made. Secondly, budget has been restricted to be invested in other areas. Hence, both the assumptions are implicit.

46. (*d*) Both the assumptions are implicit in the statement. Major modifications in the educational system imply that the existing educational system was not serving the purpose very well and there was need to modify it.

47. (*d*) The statement implies that politicians win elections by the votes of people. Therefore, neither of the assumptions is implicit in the statement.

48. (*d*) Neither I nor II is implicit in the statement. The statement does not indicate that confidence and economic development are related.

49. (*d*) None of the assumptions is implicit in the statement. The statement implies that industrious people are rich.

50. (*a*) Only Assumption I is valid. It is clear that creativity and intelligence are related.

    Assumption II is not an assumption at all. It is mere restatement of the given statement.

51. (*b*) Assumption I is not implicit as people may like to see this particular match even if other matches are played in near future. Again, when we start in a queue, we hope to get ticket. Hence, Assumption II is implicit.

52. (*a*) Boards have been put with the assumption that it will get desired response from the motorists. Hence, Assumption I is implicit. Assumption II is not implicit because it negates the desired response from the boards put up.

53. (*a*) Employee association urged so because it assumed that members would respond positively. Hence, I is implicit. II is not implicit as it may not be there in the association's mind.
54. (*b*) I is invalid as there is no indication of an earlier meeting. II is implicit in the call for the meeting.
55. (*b*) The corporation has not advised the people to leave the city. Hence, I is not implicit. II is implicit as any advice is given with the assumption that it will be listened to and then listeners will do what the advice suggests.
56. (*d*) Clearly, both the assumptions are implicit in the statement.
57. (*a*) Only Assumption I is implicit in the statement. Power and selfishness are root cause of social evils.
58. (*a*) Assumption I is implicit as it is this that makes us import sugar in spite of the increase in the number of sugar factories. Assumption II is invalid because "future" is beyond the scope of given statement.
59. (*b*) Assumption I is not implicit as it has no connection with the given statement. Infact compensation cannot be a solution to terrorist attack. Assumption II is implicit because compensation is a way of sympathising with the victims.
60. (*a*) Assumption I is implicit because only then switching over to online mode makes sense. But in case of Assumption II, the switching over may have been prompted by economic factors or those of convenience. Hence, II is not implicit.
61. (*b*) Assumption I is invalid because of the world 'only'. Assumption II is implicit as without considering this factor the relocation of factories would not make sense.
62. (*a*) It is a fact that Government's moves are generally aimed at protecting the interests of the masses. Hence, I is implicit. II is invalid because "any other way" suggests that there might be other means of gambling which have not been considered detrimental for the people.
63. (*c*) Most of the people who stop smoking have gained weight, that does not mean that if one quits smoking, he/she will surely gain weight or non-smokers cannot gain weight. So, neither Assumption I nor II is implicit.
64. (*a*) Smoking is injurious to health means that non-smoking promotes health and yes, this warning is necessary for various public places, therefore Assumption I is implicit.
65. (*a*) If I say that I do something madly, that does not mean that I am actually mad. Infact, it means that I was out of senses while doing that act but otherwise, I am fine. A mad man will definitely not say that "I chased him like a mad man". Hence, I is implicit but II is not.
66. (*c*) Assumption I is not related to the statement. But Assumption II is related to the statement because in the statement it is said that if it is easy to become an engineer, I do not want to become an engineer, *i.e.*, only that thing is to be achieved which is hard earned.
67. (*a*) I is implicit as any notification is given with the assumption that targeted people will respond according to the want of such the notification. II is not implicit as notification has been given for all employees and hence all are expected to read it.
68. (*c*) Assumption I is not related to the statement. So, it is not implicit but Assumption II is implicit because banking has become very competitive, so bank officers are trying to earn goodwill of public by giving them good service.

Type 2 One Statement and Three or More Assumptions Based Problems

This type is very much similar to the type I. The only difference is that such problems have three or more assumptions in place of two.

Directions (Example Nos. 17-20) In each of the examples below, is given a statement followed by three assumptions numbered I, II and III. An assumption is something supposed or taken for granted, you have to consider the statement and the assumptions and decide which of the assumption(s) is/are implicit in the statement.

Ex **17** **Statement** Dhoni is the best captain of the Indian cricket history so far, Tendulkar to a news reporter.

Assumptions I. Other captains were worst.

II. India will not get better captain than Dhoni in future.

III. Tendulkar knows the captainship quality of Dhoni.

(a) Only Assumption I is implicit
(b) Only Assumption II is implicit
(c) Only Assumption III is implicit
(d) None is implicit

Sol. (c) Assumption I is not implicit as it has no connection with the given statement. Dhoni is the best does not mean others were worst. Assumption II is also not implicit because of the phrase 'so far' which indicates that Tendulkar's assessment is for past and present scenario and not for the future. There may be a possibility that India would get better captain than Dhoni in future. But Assumption III is a valid assumption. Without knowing the captainship quality of Dhoni, Tendulkar will not say him best.

Ex **18** **Statement** Go and vote out the congress from your constituency, Anna Hazare in his address to the people of Hisar.

Assumptions I. Anna wants congress defeat in Hisar election.
II. Anna is supporting BJP.
III. People will ignore what Anna said.

(a) Both Assumptions II and III are implicit
(b) Only Assumption III is implicit
(c) Both Assumptions I and II are implicit
(d) Only Assumption I is implicit

Sol. (*d*) I is implicit in 'vote out the congress'. II is not implicit as nothing has been said about BJP directly or indirectly. Infact, II has no connection with the given statement. Again, III is invalid assumption as saying something to an individual or a group does mean assuming desired response. Infact, we cannot address a mass with an assumption that we will be ignored for what we say.

Ex **19** **Statement** Prakash decided to get the railway reservation in April for the journey he wants to make in July to Mumbai.

Assumptions I. The railways issue reservation three months in advance.
II. There are more than one train to Mumbai.
III. There will be vacancy in the desired class.

(a) Both Assumptions II and III are implicit
(b) Only Assumption I is implicit
(c) All Assumptions are implicit
(d) Both Assumptions I and II are implicit

Sol. (*b*) In the statement, it is given that Prakash has decided to get reservation three months in advance. This clearly implies that there exists a provision for getting seat/berth reservations three months in advance. Hence, Assumption I is implicit. But nothing in the statement has been given about number of trains and availability of seats in desired class. Hence, Assumptions II and III do not follow.

Ex **20** **Statement** Radha wrote second letter to her father after two months as she did not receive any reply to the first letter.

Assumptions I. Radha's father did not receive the letter.
II. The letter generally reaches within a week.
III. Her father promptly sends reply to her letters.

(a) Both Assumptions II and III are implicit
(b) Only Assumption III is implicit
(c) None Assumption is implicit
(d) Both Assumption I and III are implicit

Sol. (*b*) It cannot be said definitely that Radha's father did not receive the letter and there may be other reasons for not responding to the letter immediately. Time limit for letter has not been given anywhere in the statement. Hence, Assumptions I and II are not implicit. Since her father use to respond her promptly, therefore after having waited, she had written to her father again. Hence, Assumption II is implicit.

Direction (Example No. 21) A statement is given followed by four assumptions (a), (b), (c) and (d). You have to consider the statement to be true, even if it seems to be variance from commonly known facts. You are to decide which of the given assumptions can definitely be drawn from the given statement. Indicate your answer. **[SSC (CGL) 2008]**

Ex **21** **Statement** Television has a strong influence in the young children's development.

Assumptions

(a) Children watching TV should be controlled by the parents
(b) Young Children should not be allowed to watch TV programmes
(c) Television affects the academic progress of the young children
(d) While developing TV programmes, educational, developmental and moral aspects of children should be taken care of

Sol. (*d*) Clearly, assumption (d) is valid. It is mentioned that television has a strong influence in the young children's development. Therefore, while developing TV programmes, educational developmental and moral aspects of children should be taken care of.

Practice Corner **2.2**

Build your Confidence...

Directions (Q. Nos. 1-23) In each of the questions below, is given a statement followed by three assumptions numbered I, II and III. An assumption is something supposed or taken for granted, you have to consider the statement and the assumptions and decide which of the assumption(s) is/are implicit in the statement.

1. Statement Fast Track Objective Arithmetic published by 'Arihant Publication' can do wonders for those preparing for objective competitive exams, an advertisement in newspaper 'X'.

Assumptions

I. Arithmetic is asked in objective competitive exams.
II. Fast Track Objective Arithmetic is the only book on Arithmetic published by Arihant Publication.
III. People read newspaper 'X'.

(a) Only Assumption III is implicit
(b) Only Assumption I is implicit
(c) Only Assumption II is implicit
(d) I and III are implicit

2. Statement Congress has crossed all the limits of corruption and this is the reason why people vote out congress and bring back BJP into power, Lal Krishna Advani tells in a press conference.

Assumptions

I. An honest Government is needed.
II. BJP is honest.
III. No any other party should fight in upcoming election.

(a) II and III are implicit
(b) Only III is implicit
(c) Only I is implicit
(d) I and II are implicit

3. Statement "If Mr 'X' does not mend his ways, I will call the police".

Assumptions

I. Mr. 'X' may mend his ways.
II. The police may help me.
III. Mr 'X' was my friend in past.

(a) I and II are implicit
(b) II and III are implicit
(c) I and III are implicit
(d) All are implicit

4. Statement You should not drink. You must take care of your health, Ramesh tells his friend Ravi.

Assumptions

I. Ravi will heed to Ramesh's advice.
II. Ramesh knows the ill effects of drinking.
III. Drinking is not good for health.

(a) II and III are implicit
(b) None is implicit
(c) All are implicit
(d) I and III are implicit

5. Statement 'Smoking is injurious to health', A warning printed on the cigarette packets. **[MAT 2005]**

Assumptions

I. People read printed matter on a cigarette packet.
II. People take careful note of a warning.
III. Non-smoking promotes health.

(a) Only I is implicit
(b) I and II are implicit
(c) Only II is implicit
(d) All are implicit

6. Statement The company has decided to increase the price of all its products to tackle the precarious financial position. **[NIFT (PG) 2013]**

Assumptions

I. The company may be able to wipe out the entire losses incurred earlier by this decision.
II. The buyer may continue to buy its products even after the increase.
III. The company has adequate resources to continue production for few more months.

(a) None is implicit
(b) II and III are implicit
(c) I and III are implicit
(d) Only II is implicit

7. Statement The State Government has unilaterally increased octroi by 5% on all commodities entering into the State without seeking approval of the Central Government.

Assumptions

I. The State Government may be able to implement its decision.
II. The Central Government may agree to support the State Government's decision.
III. The State Government may be able to earn considerable amount through the additional octroi.

(a) All are implicit
(b) I and II are implicit
(c) None is implicit
(d) II and III are implicit

8. Statement The Central Government has directed the State Government to reduce the Government expenditure in view of the serious resource crunch and it may not be able to sanction every additional grant to the states for the next six months.

Assumptions

I. The State Government is totally dependent on the Central Government for its expenditure.

II. The Central Government has reviewed the expenditure account of the State Government.

III. The State Government will abide by the directives.

(a) II and III are implicit (b) All are implicit
(c) None is implicit (d) Only III is implicit

9. Statement "To make a company commercially viable there is an urgent need to prune the staff strength and borrow money from the financial institutions.", opinion of a consultant.

Assumptions

I. The financial institutions lend money for such proposals.

II. The product of the company has a potential market.

III. The employees of the company are inefficient.

(a) II and III are implicit (b) All are implicit
(c) None is implicit (d) I and II are implicit

10. Statement "Buy 'Y' TV for better sound quality.", an advertisement.

Assumptions

I. 'Y' TV is the only TV in the market.

II. 'Y' TV is the costliest.

III. People generally ignore such advertisements.

(a) Only I is implicit (b) Only II is implicit
(c) Only III is implicit (d) None is implicit

11. Statement "Look at her audacity Madhu has not replied to my letter", A tells B.

Assumptions

I. Madhu received his letter.

II. Madhu did not receive his letter.

III. The letter was sent by post.

(a) Only I is implicit (b) Only II is implicit
(c) Only III is implicit (d) All are implicit

12. Statement She had the ability to be a very good singer but she could not explore herself in that direction, A tells B about D.

Assumptions

I. D is a male.

II. D is a female.

III. A and B are close friends.

(a) Only III is implicit (b) I and III are implicit
(c) Only II is implicit (d) None is implicit

13. Statement "Use 'Nova' cold cream for fair complexion.", an advertisement.

Assumptions

I. People like to use cream for fair complexion.

II. People are easily fooled.

III. People respond to the advertisements.

(a) Only I is implicit (b) Only II is implicit
(c) I and III are implicit (d) I and II are implicit

14. Statement "Since no university has responded to our proposal, we shall not depute any faculty member on the course this year."

Assumptions

I. The proposal has been received by the universities.

II. The proposal had also indicated financial provision.

III. The proposal was unanimously approved by the State Government also.

(a) Only I is implicit (b) Only III is implicit
(c) None is implicit (d) I and III are implicit

15. Statement "We must introduce objective type tests to reform improve our examination system for admission to MBA", the chairman of the admission committee tells the committee.

Assumptions

I. The admission at present is directly through interview.

II. The admission committee is desirous of improving the admission exams.

III. The chairman himself is an MBA.

(a) Only I is implicit (b) Only II is implicit
(c) I and II are implicit (d) I and III are implicit

16. Statement The electricity company informed the consumers through a notice that those who did not pay their bills by the due date would be charged penalty for every day of default. **[CG PSC 2013]**

Assumptions

I. Money collected as penalty would compensate for the losses incurred due to delay in making payments of the bills

II. People generally read notice.

III. Majority of people would pay their bills by the due date to avoid penalty.

(a) All are implicit
(b) Only I is implicit
(c) None is implicit
(d) I and II are implicit
(e) II and III are implicit

17. Statement "In our report published last week, the name of the author was miss-spelt. We regret the error", a magazine editor.

Assumptions

I. The name of the author was not easy to spell.

II. Publishing correct name of authors is not as important as the quality of the article.

III. Publishing correct name of authors is desirable.

(a) Only I is implicit
(b) II is implicit
(c) Only III is implicit
(d) I and III are implicit

18. Statement "Wanted a two bedroom flat in the court area for immediate possession", an advertisement.

Assumptions

I. Flats are available in the court area.
II. Some people will respond to the advertisement.
III. It is a practice to give such an advertisement.

(a) None is implicit
(b) I and II are implicit
(c) Only II is implicit
(d) All are implicit

19. Statement A group of friends decided to go for a picnic to Avon during the next holiday season to avoid crowd of people.

Assumptions

I. Generally many people don't go to Avon.
II. People prefer other spots to Avon.
III. Many people know about Avon.

(a) All are implicit
(b) Only II is implicit
(c) I and II are implicit
(d) I and III are implicit

20. Statement The telephone company informed the subscribers through a notification that those who don't pay their bills by the due date will be charged penalty for every defaulting day.

Assumptions

I. Majority of the people may pay their bills by the due date to avoid penalty.
II. The money collected as penalty may settle off the losses due to the delayed payments.
III. People generally pay heed to such notices.

(a) None is implicit
(b) I and III are implicit
(c) Only II is implicit
(d) II and III are implicit

21. Statement Considering the tickets sold during the last seven days, the circus authorities decided to continue the show for another fortnight which includes two weekends.

Assumptions

I. People may not turn up on week days.
II. The average number of people who will be visiting circus will be more or less same as that of the last seven days.
III. There may not be enough response at other places.

(a) None is implicit
(b) Only II is implicit
(c) I and II are implicit
(d) All are implicit

22. Statement "Slogans against smoking in office should be put on the notice board", An employee in one office suggests.

Assumptions

I. The employee felt that his suggestion will be considered.
II. People smoke in the office.
III. Some people will stop smoking in the office after reading the slogans.

(a) None is implicit
(b) I and III are implicit
(c) I and II are implicit
(d) Only I is implicit

23. Statement Unable to manage with the present salary, Tarun joined another company.

Assumptions

I. The new company has better work environment.
II. The present company offers moderate pay packet.
III. The new company offers higher salary to the all its employees.

(a) All are implicit
(b) None is implicit
(c) Only II is implicit
(d) II and III are implicit

Directions (Q. Nos. 24-28) In each of the questions below, is given a statement followed by three assumptions numbered, I, II and III. An assumption is something supposed or taken for granted, you have to consider the statement and the assumptions and decide which of the assumption(s) is/are implicit in the statement.

24. Statement The municipal corporation has given permission for holding fun fairs in the local football ground during the holiday season. **[Hotel Mgmt 2009]**

Assumptions

I. The local residents may protest against the corporation's decision.
II. Many people may not participate in the fun fair.
III. Only children are allowed to take part in the fun fair.

(a) None is implicit
(b) All are implicit
(c) Only III is implicit
(d) I and II are implicit

25. Statement "Buy pure and natural honey of company 'X', an advertisement in a newspaper.

Assumptions

I. Artificial honey can be prepared.
II. People do not mind paying more for pure honey.
III. No other company supplies pure honey.

(a) Only I is implicit
(b) I and II are implicit
(c) I and III are implicit
(d) All are implicit

26. Statement Railway authority has started internet booking facility of long distance trains and also delivering the tickets at the doorstep through courier service at a little extra cost.

Assumptions

I. Many customers may now book their tickets through internet, resulting into less crowd at ticket booking office.
II. Most of the customers may still buy their railway tickets at the booking counters.
III. People will ignore this facility.

(a) Only III is implicit
(b) II and III are implicit
(c) None is implicit
(d) None of the above

27. Statement " 'Z' TV is the only TV which gives the viewers chance to watch two programmes simultaneously", an advertisement.

Assumptions

I. Sale of 'Z' TV may increase because of the advertisement.
II. Some people may be influenced by the advertisement and buy 'Z' TV.
III. The sale of 'Z' TV may be on the downward trend.

(a) None is implicit (b) II and III are implicit
(c) I and II are implicit (d) All are implicit

28. Statement The company has recently announced series of incentives to the employees who are punctual and sincere.

Assumptions

I. Those who are not punctual at present may get motivated by the announcement.
II. The productivity of the company may increase.
III. The profit earned by the company may be more than the amount to be spent for the incentive programmes.

(a) None is implicit (b) All are implicit
(c) II and III are implicit (d) I and II are implicit

Directions (Q. Nos. 29-33) In each of the questions below, is given a statement followed by three assumptions numbered I, II and III. An assumption is something supposed or taken for granted, you have to consider the statement and the assumptions and decide which of the assumption(s) is/are implicit in the statement. **[Andhra Bank (PO) 2007]**

29. Statement "If you have obtained 75% or more marks in X standard, your admission to our coaching class for XII standard is guaranteed", an advertisement.

Assumptions

I. Bright students generally do not opt for attending coaching classes.
II. The coaching class has adequate capacity to accomodate all such students.
III. The advertisement will be ignored.

(a) Only II is implicit (b) Only III is implicit
(c) None is implicit (d) Only I is implicit
(e) All are implicit

30. Statement "Television 'P', the neighbour's envy the owner's pride", a TV advertisement.

Assumptions

I. Catchy slogans appeal to people.
II. People are envious of their neighbour's superior possessions.
III. People want to be annoyed by their neighbours.

(a) I and II are implicit (b) Only III is implicit
(c) I and III are implicit (d) All are implicit
(e) None of these

31. Statement There is a big boom in drug business and a number of Jhuggi-Jhopari dwellers in Delhi can be seen pedaling with small pouches of smack and brown sugar.

Assumptions

I. Drug addiction is increasing in the country, specially in the capital.
II. All the big dons involved in the smuggling of drugs live in Jhuggi-Jhopari areas.
III. Most of the Jhuggi-Jhopari dwellers would do anything for money.

(a) Only I is implicit
(b) Only II is implicit
(c) Only III is implicit
(d) I and III are implicit
(e) None is implicit

32. Statement Ramesh decided to get the railway reservation in February for the journey he wants to make in May to Chennai.

Assumptions

I. The railway issues reservations three months in advance.
II. There are more than one train to Chennai.
III. There will be vacancy in the desired class.

(a) II and III are implicit
(b) Only I is implicit
(c) All are implicit
(d) I and III are implicit
(e) None of the above

33. Statement The school authority decided to open a summer school this year in the school compound for the students in the age group of 7-14 yr.

Assumptions

I. All the students will attend the summer school.
II. All the parents will prefer to remain in city than going out of town for enabling their children to attend the summer school.
III. Those who cannot afford to go out of the station, will send their children to summer school.

(a) Only II is implicit
(b) II and III are implicit
(c) None is implicit
(d) All are implicit
(e) Only III is implicit

Directions (Q. Nos 34-38) In each question below is given a statement followed by three Assumptions I, II and III. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumption(s) is/are implicit in the statement. [SBI (PO) 2010]

34. Statement The police authority cordoned off the entire locality for the entire day and stopped all vehicular movement for the visit of a top functionary of the government in view of the threat perception and advised all the residents in the area to limit their movement outside their dwellings.

Which of the following assumption(s) is/are implicit in the above statement?

I. The police personnel may not be able to control the vehicular movement in the locality and may seek help from the armed forces.
II. People living in the locality may move out of their houses for the day to avoid inconvenience.
III. The Government functionary may request the police authority to lift the ban on the movement of residents of the locality outside their dwellings.

(a) None is implicit
(b) Only I is implicit
(c) Only II is implicit
(d) Only III is implicit
(e) II and III are implicit

35. Statement The apex body controlling universities in the country has decided to revise the syllabus of all the technical courses to make them focused towards the present needs of the industry, thereby making the technical graduates more employable than they are at present.

Which of the following assumption(s) is/are implicit in the above statement?

I. Technical college affiliated to different universities may not welcome the apex body's decision and may continue with the same syllabus as at present.
II. The industry may welcome the decision of the apex body and scale up their hiring from these colleges.
III. The Government may not allow the apex body to implement its decision in all the colleges as it may lead to chaos.

(a) None is implicit
(b) Only I is implicit
(c) Only II is implicit
(d) Only III is implicit
(e) II and III are implicit

36. Statement Government has urged all the citizens to use electronic media for carrying out their daily activities, whenever possible, instead of using paper as the manufacture of paper requires the cutting down of a large number of trees causing severe damage to the ecosystem.

Which of the following assumption(s) is/are implicit in the above statement?

I. Most people may be capable of using electronic media to carry out various routines.
II. Most people may have access to electronic media for carrying out their daily routine activities.
III. People at large may reject the Government's appeal and continue using paper as before.

(a) Only I is implicit
(b) Only II is implicit
(c) I and II are implicit
(d) Only III is implicit
(e) None of the above

37. Statement The Government has decided to auction construction of highways to private entities in several blocks across the country on build-operate-transfer basis.

Which of the following assumption(s) is/are implicit in the above statement?

I. An adequate number of private entities may not respond to the Government's auction notification.
II. Many private entities in the country are capable of constructing highways within a reasonable time.
III. The Government's proposal of build-operate-transfer may financially benefit the private entities.

(a) I and II are implicit
(b) II and III are implicit
(c) Only II is implicit
(d) I and III are implicit
(e) None of the above

38. Statement The airlines have requested all their bonafide passengers to check the status of flight operations before leaving their homes as heavy fog is causing immense problems to normal flight operations.

Which of the following assumption(s) is/are implicit in the above statement?

I. Majority of the air passengers may check the flights status before starting their journey to the airport.
II. The Government may take serious objection to the notice issued by the airline company.
III. Majority of the passengers may cancel their tickets and postpone their journey till the situation become normal.

(a) None is implicit (b) Only I is implicit (c) Only II is implicit (d) Only III is implicit
(e) I and III are implicit

Response & Interpretations **(2.2)**

1. (*d*) Assumption I is implicit as the advertisement suggests to read the given book for objective competitive exams. Assumption II is invalid because it has no relation with the given statement. Assumption III will be implicit because only then the advertisement makes sense.
2. (*d*) Because congress is involved in corruption, the statement suggests to vote congress out of power. It means need of the honest Government is hidden in the statement. Hence, Assumption I is implicit. Assumption II is implicit as statement suggests the BJP as a substitute for the corrupt Government of congress. Assumption III has no connection at all with the given Government.
3. (*a*) 'If he does not mend his ways' implies that there is a possibility for him to mend his ways. Hence, Assumption I is implicit. Further, the person is depending upon the police, if he finds it necessary. It means the person must be assuming that police will help him. Hence, Assumption II is also implicit. Assumption III is nothing to do with the given statement.
4. (*c*) Anybody advises anyone with the assumption that his advice will get proper attention from the one who hears. Without assuming so, giving advice makes no sense. Hence, Assumption I is implicit. Assumption II is implicit because if one discusses about the merits or demerits of a thing, then he assumes that he knows about it. Assumption III is very much valid, otherwise the statement becomes meaningless.
5. (*c*) There is a special warning in printed form to caution people against the ill effects of smoking. Hence, Assumption II is implicit but I is not. Further, 'smoking is injurious to health' does not mean non-smoking promotes health. Therefore, Assumption III has no connection with the given statement. Hence, Assumption III is not implicit.
6. (*a*) None of the assumptions is implicit in the statement. Assumption I is not implicit because the word 'entire' makes the assumption doubtful. Assumption II is not implicit because neither we know the quality of the product nor the market for this product. Assumption III is not implicit because we cannot say anything about the quantity of resources of the company.
7. (*a*) State Government's decision to increase octroi by 5% is based on the assumption that the State Government is competent enough to implement the decision and also get the consent of the Central Government. The hike is in view of earning additional amount.
8. (*a*) The use of the word 'totally' makes the assumption doubtful. It is given that the Central Government has directed the State Government to reduce its expenditure account and also the State Government will abide by the directives.
9. (*d*) Consultant in his opinion emphasises the need for mobilising the staff and raising the funds. This means that the product of the company has a potential market and also that the financial institutions provide money for such proposals.
10. (*d*) Assumption I is invalid because of the word 'only'. Assumption II has also no connection with the given statement. So, Assumption II also becomes invalid. In case of III, we can say that an advertisement is given to get desired response and not to be ignored. Hence, Assumption III again is an invalid assumption.
11. (*a*) Assumption I is implicit as A has categorically stated that Madhu has not replied to his letter, it means that she has received his letter. Assumption II is invalid because of the correctness of Assumptions I and III are not implicit as it has no relation with the given statement.
12. (*c*) Assumption II is implicit because the word 'she' has been used for D. Assumption I is not implicit because of the correctness of II while III is not implicit as we cannot conclude on the basis of given statement that A and B are close friends.
13. (*c*) Advertisement is issued assuming that product is used by people for various uses. Secondly, advertisements are used for publicity because people respond to the advertisements. Hence, Assumptions I and III are implicit. However, we cannot say that people are easily fooled. Hence, Assumption II is not implicit.
14. (*a*) Statement contains the reaction of the department over the silent view taken by the university on their proposal for some course. It is, therefore assumed that university has accepted the proposal.
15. (*b*) The present method of admission is not known from the statement. Secondly, it is not necessary that Chairman is an MBA. However, it is clear that intention behind introducing the objective type test is to reform the system of examination.
16. (*e*) Only Assumptions II and III are implicit.
17. (*c*) It is only said in the statement that author's name was miss spelt and that is regretted. It would not be proper to draw assumptions such as I or II. Only Assumption III is implicit.

18. (*c*) Advertisement has been given assuming that some people will respond to the advertisement. Hence, only Assumption II is implicit. However, Assumptions I and III are doubtful.
19. (*c*) It is given in the statement that friends have decided to go for picnic to avoid crowd. This implies that many people don't go to Avon. Hence, I and II are implicit. Now, we cannot say that reason for the Avon being non-crowdy is people's unacquaintance with this spot. It may be due to other reasons also.
20. (*b*) It cannot be definitely said that for what purpose the money collected as penalty will be used. However, Assumptions I and III are in tune with the statement and hence implicit in the statement.
21. (*b*) The response of the public to the circus shows during the last seven days is reasonably good. It is, therefore assumed by the authorities to get the similar responses during the extended days. Hence, Assumption II is implicit.
22. (*c*) Assumptions I and II are clearly implicit in the statement. Assumption III represents the consequent effect for which nothing can be said definitely.
23. (*c*) Tarun has left the company due to the meagre salary. Hence, Assumption II is implicit. However, we cannot say anything about the work environment and salary of all other employees from this.
24. (*a*) The step taken by municipal corporation aims at providing good entertainment for local residents during the holidays. No doubts, the municipal corporation must be assuming that local residents will take part in it to enjoy. Assumptions I and II go against this assumption and hence they are not valid. Assumption III is also not implicit because of the word 'only'.
25. (*a*) The word 'natural' has been mentioned in the statement and that part of the statement is 'natural and pure honey'. It does mean that artificial honey can be made. Hence, Assumption I is implicit. Assumption II is not implicit as no comparison is made of the prices of natural and artificial honey. Assumption III is again invalid as it has no relation with the given statement.
26. (*d*) Assumption I is implicit as the initiative taken by the railway authority has been aimed at making the service customer friendly. But Assumption II is not implicit because it may or may not be an assumption.
27. (*c*) The advertisement as described in the statement is meant to influence the buyers and thus increasing sale of the television. Hence, Assumptions I and II, both are implicit.
28. (*d*) Incentives for the punctuality and sincerity will work as a motivation force. This will definitely increase the productivity of the company. However, profitability cannot be predicted definitely as it depends on other factors.
29. (*a*) Assumption I is invalid as it goes against the given statement. Further, without assuming II, such advertisement makes no sense. Hence, Assumption II is implicit. Assumption III again is an invalid assumption because any advertisement is given with the assumption of getting desired response and not for being ignored.
30. (*a*) This advertisement does not make any sense without assuming Assumptions I and II. Hence, I and II are implicit. Assumption III is rubbish, it has actually no connection with the given statement. Hence, it is an invalid assumption.
31. (*d*) The given statement tells of boom in drug business and cites examples from the capital city. This makes Assumption I a valid assumption. Again, it is given that most Jhuggi-Jhopari dwellers are seen to indulge in transactions of drug pouches. This implies that they give in to their lust for money quite easily and get involved in illegal activities for the same. Hence, Assumption III is very much valid. But Assumption II is not implicit as II has no connection with the given statement.
32. (*b*) In the statement nothing has been given about the number of trains and vacancy for reservation. Therefore, Assumptions II and III are not implicit. However, it is given that Ramesh takes reservation for May in February which clearly indicates that there is provision of reservation three months in advance. So, Assumption I is implicit.
33. (*c*) The use of the word 'all' in Assumptions I and II makes the assumptions doubtful and also we cannot say that those, who cannot afford to go out of the station, will send their children to summer school. Hence, none of the assumptions is implicit.
34. (*a*) All the given assumptions are contrary to the given statement and hence, they all are invalid.
35. (*c*) Assumption II is implicit because whenever such a decision is taken, the assumptions are that it would be welcomed and allowed to implement. Assumptions I and III will be invalid for the same reason.
36. (*c*) It is clear from the given statement that the urging of the Government makes sense only when Assumptions I and II are implicit.
37. (*b*) The decision to auction assumes response to it. Hence, Assumption I is not implicit. Assumption II is implicit as unless the private entities are capable, the decision would make no sense. Further, without financial benefit, private entities would not turn up for the auction. Hence, Assumption III is implicit.
38. (*b*) To make the request meaningful I must be a valid assumption. Hence, Assumption I is implicit. In case of II, Government is out of the picture. Hence, Assumption II is not implicit. Assumption III also invalid as the case may be only of delay, not of cancellation of flight.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-12) In each question below is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumption(s) is/are implicit in the statement.

Give answer

(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if either Assumption I or II is implicit
(d) if neither Assumption I nor II is implicit
(e) if both Assumptions I and II are implicit

1. Statement It is surprising that India beat Australia even after follow on. It happens 2nd time in the history of test cricket.

Assumptions

I. Winning after follow on is possible.
II. India cannot repeat such victory again.

2. Statement "We must appoint more subordinate officers on our office staff", the manager said to the chairman.

Assumptions

I. Subordinate officers are available.
II. The present office staff is inefficient.

3. Statement Even after retirement from international cricket, the 'Rawalpindi express' is in the controversy again. This time he targeted Sachin Tendulkar through his book 'Controversially yours', a news about Shoaib Akhtar.

Assumptions

I. Shoaib Akhtar does not play test cricket now.
II. One can target anybody through one's write up.

4. Statement The Government has decided to hold the employers responsible for deducting tax at source for all its employees.

Assumptions

I. The employee may still not arrange to deduct tax at source for its employees.
II. The employees may not allow the employers to deduct tax at source.

5. Statement The X-airlines has decided to increase the passenger fare by 15% with immediate effect.

Assumptions

I. The demand for seats of X-airlines may remain unchanged even after the hike of the fare.
II. Other airline companies may also hike the passenger fares.

6. Statement "Our bank provides all your banking requirements in one location", an advertisement of a bank.

Assumptions

I. Customers prefer to carry out all banking transactions at one place.
II. People may get attracted by the advertisement and carry out their transactions with the bank.

7. Statement Imprisonment for 27 yr made Nelson Mandela the President.

Assumptions

I. Only who will be imprisoned for 27 yr will become the President.
II. To become the President, imprisonment is a qualification.

8. Statement There has been a remarkable increase in the air traffic in India during the past few years.

Assumptions

I. Travelling by air has become a status symbol now.
II. Large number of people are able to afford air travel now.

9. Statement A good executive has to be task oriented as well as people oriented.

Assumptions

I. Some executives are people-oriented.
II. Some executives are not people-oriented.

10. Statement Read this book to get detailed and most comprehensive information on this issue.

Assumptions

I. The person who wants this information can read.
II. There are other books available on this issue.

11. Statement Let us announce attractive incentives for better performance.

Assumptions

I. Incentives schemes don't work in long run.
II. The performance can be improved.

12. Statement Why don't you invite Anthony for the Christmas party this year?

Assumptions

I. Anthony is not from the same city.
II. Unless invited, Anthony will not attend the party.

Direction (Q. No. 13) Read the following information carefully and answer the given question.

Pets are not allowed in the park premises-A notice put up at the park entrance by the authority that is responsible for maintenance of the park.

13. Which of the following can be an assumption according the the given information? (An assumption is something that is supposed or taken for granted).

(a) Atleast some people who visit the park have pets
(b) This is the only park which does not allow pets
(c) People who ignored this notice were fined
(d) There are more than one entrances to the park
(e) Many people have now stopped visiting the park

Directions (Q. Nos. 14-15) In the following questions, a statement is given followed by three Assumptions I, II and III. In the context of the questions an assumption is something to be taken for granted. You have to consider the statement and the assumptions and decide which of the assumptions is implicit in the statement, then decide which one of the answer is correct. [JMET 2011]

14. Statement Prakash decided to get his railway reservation done in the month of May for the journey he wants to undertake in July to Mumbai.

Assumptions

I. The railways open reservation two months in advance.
II. There is more than one train to Mumbai.
III. There will be a vacancy in the desired class.

(a) Both II and III
(b) Only I
(c) Both I and II
(d) Only III

15. Statement In a recently held all-India conference, the session on Brand Management in India surprisingly attracted a large number of participants and also received excellent media coverage in the leading newspapers.

Assumptions

I. Nobody expected such an encouraging response to Brand Management.
II. Brands are not managed properly in India.
III. The Media is always very positive towards Brands

(a) Only I (b) Both I and II
(c) Both I and III (d) I, II and III

Direction (Q. No. 16) A statement followed by four assumptions numbered I, II, III and IV are given. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumptions is implicit in the statement then decide which of the answers (a), (b), (c) or (d) is correct. [JMET 2009]

16. Statement The companies that showed relatively high import orientation in India were not the ones that benefited the most from Government interventions during the heydays of import substitution.

Assumptions

I. High import companies do not need Government support.
II. Low import companies received more Government support.
III. Import oriented companies are affected by Government prices.
IV. Exporting of goods get affected by Government .

(a) Only I (b) Only III (c) Both II and IV (d) All four

17. The question below has a statement followed by two assumptions. You have to decide whether the assumption is implied in the statement. Indicate your answer.

Statement Rich people are more prone to have heart attacks. **[SSC (10+2) 2011**

Assumptions

I. Most of the deaths among rich people are due to heart attacks.

II. Poor people do not have heart attacks.

(a) Only I is implicit (b) Only II is implicit

(c) Both I and II are implicit (d) Neither I nor II is implicit

Directions (Q. Nos. 18-21) In each question below, is given a statement followed by three assumptions numbered I, II and III. An assumption is something supposed or taken for granted, you have to consider the statement and the assumptions and decide which of the assumption(s) is/are implicit in the statement.

Give answer

(a) if only Assumption I is implicit

(b) if only Assumption II is implicit

(c) if either Assumption I or II is implicit

(d) if neither Assumption I nor II is implicit

(e) if both Assumptions I and II are implicit

18. Statement "Do not lean out of the moving train", a warning in the railway compartment. **[MAT 2005]**

Assumptions

I. Such warning will have some effect.

II. Leaving out of a moving train is dangerous.

III. It is the duty of railway authorities to take care of passengers' safety.

(a) I and II are implicit (b) II and III are implicit

(c) Only II is implicit (d) I and III are implicit

(e) All are implicit

19. Statement Training must be given to all the employees for increasing productivity and profitability.

Assumptions

I. Training is an essential component of productivity.

II. Employees cannot function effectively without proper training.

III. Profitability and productivity are supplementary to each other.

(a) None is implicit

(b) All are implicit

(c) Only III is implicit

(d) I and II are implicit

(e) I and III are implicit

20. Statement The situation of this area still continues to be tense and out of control. People are requested to be in their homes only.

Assumptions

I. There had been some serious incidents.

II. People will not go to the office.

III. Normality will its be restored shortly.

(a) All are implicit (b) None is implicit

(c) Only I is implicit (d) I and III are implicit

(e) I and II are implicit

21. Statement "If you are a first class graduate with atleast 65% marks, you are eligible to apply for the post of officer in our organisation." an advertisement for recruitment of officers.

Assumptions

I. There may be adequate number of applicants who will fulfil the stipulated educational qualifications.

II. Those graduates who have secured less than 65% marks may not perform well in the job.

III. Those candidates who have secured 65% or more marks in graduation are likely to perform well on the job.

(a) All are implicit (b) I and II are implicit

(c) II and III are implicit (d) I and III are implicit

(e) None of these

Directions (Q. Nos. 22-26) In each question below is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumption(s) is/are implicit in the statement.
[Corporation Bank (PO) 2010]

Give answer

(a) if only Assumption I is implicit

(b) if only Assumption II is implicit

(c) if either Assumption I or II is implicit

(d) if neither Assumption I nor II is implicit

(e) if both Assumptions I and II are implicit

22. Statement The largest domestic airlines corporation has announced new summer schedules in which more number of flights in trunk routes are introduced.

Assumptions

I. More number of passengers may travel by this airlines corporation during summer months in trunk routes.

II. Other airlines companies may also increase the number of flights in all the sectors.

23. Statement The chairman of the company decided to hold a grand function to celebrate silver jubilee during the next weekend and invited a large number of guests.

Assumptions

I. The company officials may be able to make all the necessary preparations for the silver jubilee celebration.

II. Majority of the guests invited by the chairman may attend the function.

24. Statement The largest computer manufacturing company slashed the prices of most of the desktop models by about 15% with immediate effect.

Assumptions

I. The company may incur heavy losses due to reduction in prices of the desktop.

II. The sales of desktop manufactured by the company may increase in near future.

25. Statement The school authority decided to rent out the school premises during weekends and holidays for organising various functions to augment its resources.

Assumptions I. The parents of the school students may protest against decision of the school authority.

II. There may not be enough demand for hiring the school premises for organising functions.

26. Statement The local civic body has urged all the residents to voluntarily reduce consumption of potable water by about 30% to tide over the water crisis.

Assumptions I. Many residents may reduce consumption of potable water.

II. Many activists may welcome the civic body's move and spread awareness among residents.

Directions (Q. Nos. 27-31) In each question below, is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumption(s) is/are implicit in the statement.

[BOM (PO) 2009]

Give answer

(a) if only Assumption I is implicit

(b) if only Assumption II is implicit

(c) if either Assumption I or II is implicit

(d) if neither Assumption I nor II is implicit

(e) if both Assumptions I and II are implicit

27. Statement Mohan requested his mother to arrange for food for about thirty persons as he invited all his friends to celebrate his birthday.

Assumptions

I. Most of Mohan's friends may come to his house on his birthday.

II. There may not be more than thirty who may attend Mohan's birthday party.

28. Statement A very large number of aspiring students applied for admission to the professional courses run by the renowned college in town.

Assumptions

I. All the applicants may be able to get admission to the college.

II. The admission process adopted by the renowned college may be fair to all the applicants.

29. Statement The state administration banned gathering of more than fifty people at any place during the visit of foreign dignitaries to the city.

Assumptions

I. People may avoid gathering at any place in he city during the period of visit of foreign dignitaries.

II. Many people may ignore the prohibitory orders and gather to get a glimpse of the dignitaries.

30. Statement The Government decided to levy a toll tax of ₹ 100 for every vehicle using the superhighway connecting the two big cities of the state.

Assumptions

I. Majority of the vehicles travelling between these two cities may not use the superhighway.

II. The Government may not be able to recover the cost incured for constructing the superhighway from the toll tax collection.

31. Statement The teachers of all the degree colleges went on an indefinite strike in protest against the Government's decision to postpone the pay revision to next year.

Assumptions

I. The Government may suspend all the striking teachers.
II. The Government may revise the pay of the college teachers in the current year.

Directions (Q. Nos. 32-36) In each question below is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumption(s) is/are implicit in the statement.
[Andhra Bank (Clerk) 2009]

Give answer

(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if either Assumption I or Assumption II is implicit
(d) if neither Assumption I nor Assumption II is implicit
(e) if both Assumptions I and II are implicit

32. Statement A major retail store announced thirty percent reduction on all food items during the weekend.

Assumptions

I. People may still prefer buying food items from other stores.
II. A large number of customers may visit the retail store and buy food items.

33. Statement The railway authority has rescheduled the departure time of many long-distance trains and put up the revised timing on its website.

Assumptions

I. The passengers may note the change in departure times from the website.
II. The passengers may be able to notice the change and board their respective trains before departure.

34. Statement The school authority has decided to give five grace marks in English to all the students of standard IX as the performance of these students in English was below expectation.

Assumptions

I. Majority of the students of standard IX may still fail in English even after giving grace marks.
II. Majority of the students of standard IX may now pass in English after giving grace marks.

35. Statement The civic administration has asked the residents of the dilapidated buildings to move out as these buildings will be demolished within the next thirty days.

Assumptions

I. The civic administration may be able to demolish these buildings as per schedule.
II. The residents of these buildings may vacate and stay elsewhere.

36. Statement The captain of the school football team selected only fourteen players to play all the eight matches of the interschool football competition.

Assumptions

I. There may be adequate number of football players for all the matches.
II. The captain may be able to play in all the matches.

Directions (Q. Nos. 37-41) In each question below, is given a statement followed by three assumptions numbered I, II and III. An assumption is something supposed or taken for granted, you have to consider the statement and the assumptions and decide which of the assumption(s) is/are implicit in the statement.

37. Statement "X Chocolate is an ideal gift for someone you love", an advertisement.

Assumptions

I. People generally give gifts to loved ones.
II. Such advertisements generally influence people.
III. Chocolate can be considered as a gift item.

(a) I and II are implicit
(b) I and III are implicit
(c) All are implicit
(d) II and III are implicit
(e) None of these

38. Statement Prabodh wrote a second letter to his mother after a month as he did not receive any reply to the first letter.

Assumptions

I. Prabodh's mother did not receive the letter.
II. The letter generally reaches within a fortnight.
III. His mother promptly sends reply to his letters.

(a) II and III are implicit
(b) I and II are implicit
(c) Only III is implicit
(d) I and III are implicit
(e) None of these

39. Statement "I want to present a novel written by Prem Chand to Amar on his birthday", A tells B.

Assumptions

I. Amar does not have any novel written by Prem Chand.
II. Novel is an acceptable gift for birthday.
III. A will be invited by Amar on his birthday.

(a) I and II are implicit
(b) I and III are implicit
(c) Only II is implicit
(d) All are implicit
(e) None of these

40. Statement "The employees' association has appealed to the manager of company 'S' to introduce written examination for clerical cadre recruitment to prevent selection of incompetent persons."

Assumptions

I. So, far the company 'S' used to select candidates without conducting a written examination.
II. A written examination can help to identify competent persons.
III. At higher level, written examination may not be of much use.

(a) I and II are implicit
(b) Only I is implicit
(c) Only II is implicit
(d) All are implicit
(e) None of the above

41. Statement The residents of the locality wrote a letter to the corporation requesting to restore normal in the supply of drinking water immediately as the supply at present is just not adequate.

Assumptions

I. The corporation may not take any action on the letter.
II. The municipality has enough water to meet the demand.
III. The water supply to the area was adequate in the past.

(a) I and II are implicit
(b) II and III are implicit
(c) Only II is implicit
(d) Only III is implicit
(e) None of the above

Directions (Q. Nos. 42-46) In each question below is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumption(s) is/are implicit in the statement.

[Andhra Bank (PO) 2009]

Give answer

(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if either Assumption I or II is implicit
(d) if neither Assumption I nor II is implicit
(e) if both Assumptions I and II are implicit

42. Statement Many people fell ill after consuming meal at a wedding reception and were rushed to the nearby Government and private hospitals.

Assumptions

I. The relatives of the affected people may refuse to take them to the Government hospitals.
II. The nearby hospitals may be able to attend to all the affected people.

43. Statement The Government has recently announced an incentive package for setting up new business ventures in the rural areas and promised uninterrupted power supply to all the units.

Assumptions

I. The Government may be able to supply adequate power to all such units.
II. People living in the rural areas may welcome the Government decision.

44. Statement The municipal authority blocked movement of traffic in and around the temple on the main festival day.

Assumptions

I. Very large number of devotees may visit the temple on the main festival day.
II. People travelling to the areas near the temple may postpone their journey by a day unless they have very urgent work in that area.

45. Statement The Government has instructed all the private schools in the city to maintain the current fees for atleast two more years.

Assumptions

I. The authorities of private schools may not follow the Government instruction as they are not dependent on Government funds.
II. The parents of the students of private schools of the city may still be eager to pay higher fees.

46. Statement The municipal authority has decided to demolish the old bridge on a bus road for constructing a new flyover.

Assumptions

I. The traffic department may be able to divert movement of vehicles through alternate roads.
II. The people travelling in the nearby areas may demonstrate to protest against authority's decision.

Directions (Q. Nos. 47-60) In each question below is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumption(s) is/are implicit in the statement. **[Andhara Bank (PO) 2009]**

Give answer

(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if either Assumption I or II is implicit
(d) if neither Assumption I nor II is implicit
(e) if both Assumptions I and II are implicit

47. Statement "We need to appoint more teachers", principal informs the school staff.

Assumptions

I. Teachers are available.
II. Present teachers are not good.

48. Statement "Those who are appearing for this examination for the first time, should be helped in filling up the forms", an instruction to the invigilating staff.

Assumptions

I. The form is somewhat complicated.
II. Candidates can appear more than once for this examination.

49. Statement Be humble even after gaining victory.

Assumptions

I. Many people are humble after gaining victory.
II. Generally people are not humble.

50. Statement The income tax rules need to be amended so that there is more incentive for the people to declare their actual wealth.

Assumptions

I. The income tax rules are not proper.
II. Some people do not declare their actual wealth.

51. Statement "Considering that his ministry contains many hawala-tainted ministers, the Prime Minister has a moral obligation to resign", a politician.

Assumptions

I. The politician is not close to the Prime Minister.
II. The politician would like to inculcate moral principles in politics.

52. Statement In case of any difficulty about this case, you may contact our company's lawyer.

Assumptions

I. Each company has a lawyer of his own.
II. The company's lawyer is thoroughly briefed about this case.

53. Statement I can take you quickly from Kanpur to Lucknow by my car but then you must pay me double the normal charges.

Assumptions

I. Normally, it will take more time to reach Lucknow from Kanpur.
II. People want to reach quickly but they will not pay extra money for it.

54. Statement It is dangerous to lean out of a running train.

Assumptions

I. All those who lean out of a train run the risk of being hurt.
II. Generally, people don't like to get hurt.

55. Statement "Buy pure and natural honey of company 'X', an advertisement in a newspaper."

Assumptions

I. No other company supplies pure and natural honey.
II. People read advertisement.

56. Statement The target of a fiscal deficit of 5% of GDP could not be met because of major shortfall in revenue collection.

Assumptions

I. Shortfall in revenue collection leads to an increase in fiscal deficit.
II. Shortfall in revenue collection leads to a decrease in fiscal deficit.

57. Statement The impact of economic sanctions on economy, that is already so weak, could be devastating.

Assumptions

I. Economic sanctions impact only a weak economy.
II. The impact of economic sanctions varies from economy to economy.

58. Statement "Exercise is necessary to maintain good health", the advertisement.

Assumptions

I. Exercise is a pre-requisite for good health.
II. Such advertisements have some effect on people.

59. Statement The railway authorities have decided to increase the freight charges by 10% in view of the possibility of incurring losses in the current financial year.

Assumptions

I. The volume of freight during the remaining period may remain same.
II. The amount so obtained may set off a part or total of the estimated deficit.

60. Statement Subodh wrote to his brother at Bengaluru to collect personally the Application form from the university for the post graduation course in Mathematics.

Assumptions

I. The university may issue Application form to a person other than the prospective student.
II. Subodh's brother may receive the letter well before the last date of collecting the Application form.

Directions (Q. Nos. 61-65) In each question below is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumption(s) is/are implicit in the statement. **[BOI (PO) 2008]**

Give answer

(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if either Assumption I or II is implicit
(d) if neither Assumption I nor II is implicit
(e) if both Assumptions I and II are implicit

61. Statement The General Administration Department has issued a circular to all the employees informing them that hence forth the employees can avail their lunch break at any of the half hour slots between 1 : 00 pm and 2 : 30 pm.

Assumptions

I. The employees may welcome the decision and avail lunch break at different time slots.
II. There may not be any break in the work of the organisation as the employees will have their lunch break at different time slots.

62. Statement The Government has decided against reduction of prices of petroleum products though there is a significant drop in the crude oil prices in the international market.

Assumptions

I. The prices of crude oil in the international market may again increase in the near future.
II. The present price difference of petroleum products will help the government to with stand any possible price rise in future.

63. Statement The Government has made an appeal to all the citizens to honestly pay income tax and file returns reflecting the true income level to help the Government to carry out development activities.

Assumptions

I. People may now start paying more taxes in response to the appeal.
II. The total income tax collection may considerably increase in the near future.

64. Statement The State Government has decided to appoint four thousand primary school teachers during the next financial year.

Assumptions

I. There are enough schools in the state to accommodate four thousand additional primary school teachers.
II. The eligible candidates may not be interested to apply as the Government may not finally appoint such a large number of primary school teachers.

65. Statement The school authority has decided to increase the number of students in each classroom to seventy from the next academic session to bridge the gap between income and expenditure to a larger extent.

Assumptions

I. The income generated by way of fees of the additional students will be sufficient enough to bridge the gap.
II. The school will get all the additional students in each class from the next academic session.

Directions (Q. Nos. 66-70) In each question below, is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumption(s) is/are implicit in the statement. **[BOI (PO) 2008]**

Give answer

(a) if only Assumption I is implicit
(b) if only Assumption II is implicit
(c) if either Assumption I or II is implicit
(d) if neither Assumption I nor II is implicit
(e) if both Assumptions I and II are implicit

66. Statement The driver of the huge truck pulled the emergency brakes to avoid hitting the auto rickshaw which suddenly came in front of the truck.

Assumptions

I. The auto rickshaw driver may be able to steer his vehicle away from the oncoming truck.
II. The truck driver may be able to stop the truck before it hits the auto rickshaw.

67. Statement The doctor warned the patient against any further consumption of alcohal, if he desired to get cured from the ailment and live a longer life.

Assumptions

I. The patient may follow the doctor's advice and stop consuming alcohol.
II. The doctor may be able to cure the patient from the ailment, if the patient stops consuming alcohol.

68. Statement The chairman of the company urged all the employees to refrain from making long personal calls during working hours in order to boost productivity.

Assumptions

I. Majority of the employees may respond positively to the chairman's appeal.
II. Most of the employees may continue to make long personal calls during working hours.

69. Statement The local cultural club decided to organise a musical event to raise money for the construction of the club building.

Assumptions

I. The local residents may not allow the club to organise the musical event in the locality.
II. The money allocated by organising the musical event may be substantial enough for the club to start construction.

70. Statement The traffic police department has put up huge notice boards at all major junctions of the city, warning drivers to refrain from using cell phones while driving or else their licences will be impounded.

Assumptions

I. The drivers of the vehicles may ignore the warning and continue using cell phones while driving.
II. The traffic police department may be able to nab most of the offenders and impound their licences.

Response & Interpretations (Master Exercise)

1. (*a*) Assumption I is implicit as if it had not been possible India would not have won after follow on. Further, the word 'surprising' tells that winning after follow on is very difficult and this is the reason it happens only 2nd time. But if it is possible, we cannot say that India will not repeat such victory again. Hence, Assumption II is invalid.
2. (*a*) Here, the manager stresses the need to appoint more subordinate officers. It does mean that present staff is not efficient. In fact, he wants to say that work is much more than the working capacity of present staff strength. Hence, Assumption II is invalid. But Assumption I is implicit because without assuming the availability of subordinate officers, the manager would not have said so.
3. (*e*) 'Retirement from international cricket' means Shoaib does not play test cricket now as test cricket is a part of international cricket. Hence, Assumption I is implicit. Assumption II is also implicit because it is clearly said that Shoaib targeted Tendulkar through his book and a book is a write up.
4. (*d*) Any decision is taken assuming that it will be useful. Hence, none of the assumptions is implicit in the statement.
5. (*a*) The 'X'-airlines has decided to increase the fares assuming that it will not affect its business adversely. Therefore, Assumption I is implicit in the statement. Other airlines may or may not follow this pursuit.
6. (*e*) Both the assumptions are implicit in the statement. The point which is highlighted in any advertisement is liked by people.
7. (*d*) The given statement does not mean imprisonment is necessary. Nelson Mandela's dedicated service to the nation and his struggle for freedom, despite so many hardships won him the desired public appeal to be elected the President. Hence, neither I nor II is implicit.
8. (*b*) The given statement hints that in recent years, the number of people travelling by air has increased. This implies that large number of travellers can now afford air travel. Hence, only II is a valid assumption.

9. (*d*) The statement advises that an executive should be task oriented as well as people oriented. It is based on the assumptions that some executives are only people-oriented and some executives are only task oriented. Hence, none of the assumptions follows.
10. (*a*) It is assumed that the person instructed is capable of reading the book. However, we cannot say anything about the other sources of information. Hence, the Assumption I is implicit.
11. (*b*) As in the given statement, incentive is meant for better performance, it is, therefore assumed that incentive will improve the performance.
12. (*b*) We cannot say that Anthony is not from the same city. But it is assumed that unless invited, Anthony will not attend the party as invitation has been emphasised in the statement. Hence, only Assumption II is implicit.
13. (*a*) From the statement, it can be said that least some people who visit the park have pets.
14. (*b*) Only Assumption I is implicit.
15. (*a*) Only Assumption I is implicit.
16. (*b*) Only Assumption III follows.
17. (*d*) None of the statements is implicit in the statement. Rich people are more prone to have heart attacks. It does not imply that most of the deaths caused among rich people are due to heart attack. Again, the statement does not imply that poor people do not have heart attacks.
18. (*d*) Assumptions I and II are implicit because the warning against leaning out suggests one to be careful are against the dangers involved. No doubts that ensuring the passengers safety is the responsibility of railway authorities and hence III is also a valid assumption.
19. (*d*) Training has been necessitated in the statement, *i.e.*, it is related to the efficiency and effectiveness of an employee. Therefore, both the Assumptions I and II are implicit in the statement.
20. (*e*) The situation is tense, it means that some serious incident has occurred. Hence, Assumption I is implicit. Secondly, it is given that situation still continues to be tense and people have been requested to be inside home. Hence, Assumption II is implicit. Assumption III is rubbish and has no relation with the given statement. Hence, III is an invalid assumption.
21. (*c*) Assumptions II and III are implicit. According to II, those who have secured less than 65% marks may not perform well in the job and according to Assumption III those who have secured 65% or more marks are likely to perform well. Hence, those with atleast 65% marks are eligible to apply for the post.
22. (*a*) The increase would make no sense without passengers. Hence, Assumption I is implicit. Assumption II may be a probable reason but not a necessary one for the increase. Hence, II is invalid.
23. (*e*) We do not hold a function without being ready for the preparation. Hence, Assumption I is a valid assumption. Assumption II is also valid as when you invite someone, you assume that he will come.
24. (*b*) Assumption I is invalid because it has no relation with the statement. Assumption II is implicit as prices have been slashed with assumption that sales will increase, thus leading to profit.
25. (*d*) Both assumptions are negative and hence, invalid.
26. (*a*) Assumption I is implicit as a request is made to the people with assumption that they would comply. Assumption II is beyond the scope of statement because it takes into account the activists. Hence, II is invalid.
27. (*a*) Assumption I is implicit because without this assumption Mohan would not have said to prepare food for almost all his friends. Assumption II is invalid as about 30 implies "nearly 30, may be a few less, may be a few more."
28. (*b*) The word "All" makes I invalid but II is implicit as applicants assume a fair selection process.
29. (*a*) When an order is passed, it is assumed that people will comply with it. Hence, Assumption I is valid. II is not implicit as such an assumption makes the given statement invalid because of its negativity.
30. (*d*) Assumption I is irrelevant while II is contrary to the assumption being made.
31. (*b*) Assumption II is implicit because when workers go on a strike, they assume a positive response. Assumption I is negative to the given statement and hence becomes invalid.
32. (*b*) Prices are reduced with the motive of attracting customers. Hence, I is invalid but II is implicit.
33. (*e*) Assumptions I and II must be valid otherwise the given statement makes no sense.
34. (*b*) Assumption I is contrary to the statement hence, it becomes invalid. Assumption II is implicit as grace marks are given with the assumption that adding these marks would lead to a positive result.
35. (*e*) Both are positive statements and are in accordance with the given statement.
36. (*a*) Assumption I is implicit; otherwise more players would have been selected. Further, even without captain, there will be sufficient number of players.
37. (*c*) The statement implies that gifts are given for loved ones. It is also assumed that such advertisements generally influence people. Since, chocolate has been recommended in the advertisement, hence it is an ideal gift. Therefore, all the assumptions are implicit.
38. (*c*) Prabodh wrote the second letter to his mother only when he did not receive the reply from his mother. This fact implies that his mother promptly sends reply to his letters. Hence, only Assumption III is implicit.
39. (*e*) 'A' wants to present a book on B's birthday. It means that book is an acceptable gift and also Assumption III is implicit. But we do not have this combination as our alternative.
40. (*a*) Assumption I is implicit because there is a demand for introduction of written examination. Assumption II is also implicit as it is said in the statement that written exam will prevent the selection of incompetent persons.
41. (*b*) Assumption II and III are implicit because without these assumptions the statement does not make any sense. Assumption I is contrary to what is the purpose of the statement. Hence, I is an invalid assumption.
42. (*b*) Assumption I is invalid and has no connection with the given statement. Assumption II is implicit as if people go to nearby hospitals, they assume that those hospitals will be able to attend to all affected people.

43. (*e*) If someone make a promise, he assumes that he would be able to fulfil it. Hence, Assumption I is valid. Again, since the business ventures are planned to be setup in rural areas, Assumption II must be implicit.
44. (*e*) Assumption I is implicit as the municipal corporation takes this action in expectation of large number of devotees. Assumption II is also valid because whenever we plan something, we assume that conditions will be favourable enough.
45. (*d*) If an instruction is given, it is assumed that it may be followed. Hence, I is invalid. II is also invalid. If at all the Government assumes something about the parents, it is to the contrary that the parents may not be able to pay higher fees.
46. (*a*) Assumption I is implicit as diversion would be necessary while the construction goes on. Assumption II is not implicit as negative reactions are not assumed.
47. (*a*) School requires more teachers. It is assumed in the light of statement that teachers are available but it cannot be said that present staff of teachers is not good. Hence, only Assumption I is implicit.
48. (*e*) It is given in the statement that those who are appearing for the first time in the examination should be helped in filling up the form. The statement is totally based on the assumption that form is somewhat complicated and secondly, candidates can appear more than once in the examination. Hence, both the assumptions are implicit.
49. (*d*) The statement says a man should be humble even after being victorious. This implies that people are usually not humble after victory. Assumption I is just opposite to it, hence is not implicit. Assumption II generalises the statement. Generally, people may be humble, the point is if they are humble or not after victory. Hence, none follows.
50. (*b*) It is given in the statement that income tax rules need to be amended to tempt people to declare their actual wealth. It does not mean that income tax rules are not proper. Proper in what respect is not clear. However, Assumption II describes the reasons for such amendment of income tax rules. Hence, only Assumption II is implicit.
51. (*b*) In his opinion, the politician basically intends to point towards moral principles of politics,. Hence, Assumption II is implicit. Politician may or may not be close to the Prime Minister. So, Assumption I is not implicit.
52. (*b*) It is not necessary that every company has a lawyer. So, Assumption I is not implicit. Since it is advised in the statement that for any difficulty about the case, consult company's lawyer, its therefore assumed that company's lawyer is throughly briefed about the case. Hence, Assumption II is implicit.
53. (*a*) From the word 'quickly' in the statement, it is clearly assumed that normally it will take more time to reach Lucknow from Kanpur. However, it cannot be said whether people will pay extra money for reaching quickly or not. Hence, only Assumption I is implicit in the statement.
54. (*a*) Instruction in the statement is based on the assumption that those who lean out of a train carry the risk of being hurt. It is not inferred from the statement that people don't like to get hurt. Hence, Assumption I is implicit.
55. (*b*) Honey produced by company 'X' is being recommended because of its quality, not because of the fact that no other company supplies pure and natural honey. Since, advertisement recommends it, hence it is assumed that people read advertisements.
56. (*a*) Clearly, the statement is based on the assumption that shortfall in revenue collection leads to an increase in fiscal deficit. Hence, Assumption I is implicit.
57. (*b*) Economic sanctions may also affect a strong economy, hence, it is assumed in the light of statement that impact of economic sanctions varies from economy to economy. Hence, Assumption II is implicit.
58. (*e*) It is clearly given in the statement that exercise is necessary to maintain good health, which means that exercise is pre-requisite for good health. Secondly, an advertisement gives this advice. Hence, it is supposed that such advertisements have some effect on people.
59. (*b*) Nothing can be said about the volume of freight during the remaining period. So, Assumption I is not implicit in the statement. Secondly, it is given in the statement that fare has been increased in view of the possibility of incurring losses *i.e.*, to meet the probable deficit. Hence, Assumption II is implicit in the statement.
60. (*e*) Subodh has written to his brother to collect the form from the university. It is, therefore assumed that university may issue form to other person also and it is also supposed that his brother may receive the letter well before the last date of collecting the Application form.
61. (*e*) A decision is taken if it is felt that the decision would be an acceptance among most of the people. Hence, Assumption I is implicit. Assumption II is also implicit as the reason behind need.
62. (*d*) It is not necessary that the price rise be there in the mind of Government while taking the decision. Infact the truth is that our petroleum companies are running losses even after the drop in international price. Hence, both are invalid assumptions.
63. (*e*) Assumptions I and II both are implicit because both are imminent positive outcomes assumed.
64. (*a*) Teachers cannot be appointed in a vacuum and the reason Assumption I is a valid assumption. Assumption II is not valid as it is more of a presumption.
65. (*e*) Assumption I is implicit because when a dewsion is made, it is assumed to be effective. Further, Assumption II is also implicit as it is assumed that the stipulated target will be met.
66. (*b*) The driver does not have control on what the auto driver will do. Hence, I is invalid. But II is a valid assumption because if one takes an action he assumes its outcome.
67. (*e*) Assumption I is implicit in the very giving of the advice. Assumption II is implicit in the condition attached.
68. (*a*) When we urge someone to do something, we assume a positive response. Hence, Assumption I is implicit while for the same reason Assumption II becomes invalid.
69. (*b*) Assumption I were implicit, such a decision would not be taken. Assumption II is implicit in the purpose of fund raising that has been mentioned in the statement.
70. (*d*) Assumption I is invalid because when a warning is given it is assumed that it will be heeded to. Further, Assumption II is not belived to be the motive behind a warning. Hence, II is also invalid.

3

Statement and Conclusions

A Statement is a group of words arranged to form a meaningful sentence. A Conclusion is a judgement or decision reached after consideration about the given statement.

Different types of questions covered in this chapter are as follows

- One Statement with Two Conclusions Based
- More Than Two Statements and Conclusions Based

A conclusion is an opinion or decision that is formed after a period of thought or research on some facts or sentence stated by someone. A consequent effect has always to be analysed before reaching to the final result or conclusion of a given premise. This requires a very systematic and logical approach.

Let us take an example

e.g., **Statement** Some people say that good thoughts come in their mind in the morning.
Conclusion Thoughts come in mind, in the morning only.

Now, consider the statement, the word 'some' used in the statement does not mean 'all'. It means some people say not all. Hence, according to some people, good thoughts come in their mind in the morning but thought can come any time in the mind of other people, so, the conclusion that 'thoughts come in mind, in the morning only' is not valid. Also, the word used 'only' makes the conclusion totally invalid because its restricts that the thought can come only in the morning.

To reach to a conclusion think only about the information given in the statement. There is no need to use, assume anything else or add any further or extra information from outside but the established facts cannot be denied like the Sun always rises in the East, a day consists of 24 h etc.

e.g., **Statement** Indian President is elected through secret ballot.
Conclusion Indian President is not the supreme officer of India.

Here, the statement gives us the information that the President of India is elected through a secret ballot which is absolutely true. Now, the conclusion given *i.e.,* Indian President is not the supreme officer of India cannot be concluded from the statement, so it seems to be invalid. Also, according to the constitution it is an established fact that President is the supreme head or officer of India. Hence, the given conclusion goes against the established fact, so it is invalid.

K Memory *Add-ons*

- If statement is formed with two or more sentences, then there should be no mutual contradiction in sentences.
- Statements and conclusion should not go against established facts and prevailing notious of truth.
- If definitive words like all, always, atleast, only, exactly and so on are used, then such words make the conclusion invalid or ambiguous.
- Always read very carefully and try to find key words as key words play an important role in analysing valid and invalid conclusions.
- If the conclusion is provided with a stated example, then the conclusion is invalid.

These are several types of questions that are asked from this section in different exams. So, here we have classified the problems in two types which are explained below

Type 1 One Statement with Two Conclusions Based

In this type of questions, a statement is given followed by two conclusions. The candidate is required to find out which of conclusions follows the given statement and select the correct option accordingly.

Following examples will give a better understanding about the type of questions asked

Directions (Example Nos. 1-4) In each of the following questions, a statement is followed by two Conclusions I and II.

Give answer

(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either I or II follows
(d) if neither I nor II follows
(e) if both I and II follow

***Ex* 1** **Statement** Parents are prepared to pay any price for an elite education to their children. **[MAT 2013]**

Conclusions I. All parents these days are very well off.

II. Parents have an obsessive passion for perfect development of their children through good schooling.

Sol. (*b*) It may be concluded from the statement that since parents want a perfect development of their children through good schooling, therefore they are prepared to pay any price for a good education but the statement does not give sense of the parents being very well off. Hence, only Conclusion II follows.

***Ex* 2** **Statement** Interview panel may select a student who is neither possessing the abilities of desired level nor any value and assumptions.

Conclusions I. Inclusion of experts in interview panel does not ensure that the selection will be made properly.

II. Interview procedure of admission has some limitations.

Sol. (*e*) The statement clearly means that inclusion of experts does not ensure proper selection. It also indicates limitation of interview procedure for admission. Hence, both the conclusions follow.

***Ex* 3** **Statement** The constitutional amendment carried out just last month prohibits the employment of child labour in any organisation.

Conclusions I. The employees must now abide by this amendment to the constitution.

II. Children below 14 yr of age will now be engaged in acquiring education.

Sol. (*a*) It is clearly deduced from the statement that consequent upon the amendment prohibiting the child labour, the employees must abide by the amendment but it is not mentioned that the amendment gives any provision for acquiring education. Hence, only Conclusion I follows.

Ex **4** **Statement** In India, emphasis should be given more to agriculture engineering and technology rather than on basic and pure science.

Conclusions I. India has achieved sufficient development in the field of basic and pure science.

II. In the past, the production sector of economy was neglected.

Sol. (*d*) The extent of the development in the field of basic and pure science cannot be ascertained from the statement. Similarly,the production sector of economy was neglected in the past cannot be concluded. Hence, none of the conclusions follows from the statement.

Directions (Example Nos. 5-7) Each of these questions has a statement followed by two Conclusions I and II. Consider the statement and the following conclusions. Decide which of the conclusion follows from the statement. **[NIFT (PG) 2014, MAT 2013]**

Give answer

(a) if Conclusion I follows
(b) if Conclusion II follows
(c) if either Conclusion I or II follows
(d) if neither Conclusion I nor II follows

Ex **5** **Statement** Vegetable prices are soaring in the market.

Conclusions I. Vegetables are becoming a rare commodity.

II. People cannot eat vegetables.

Sol. (*d*) Both the conclusions are not related to the statement. Hence, neither I nor II follows.

Ex **6** **Statement** A friend in need is a friend indeed. **[SSC (CGL) 2013]**

Conclusions I. All are friends in good times

II. Enemies in bad times are not friends.

Sol. (*d*) A friend who offers help in time of need is a true friend. The use of term 'all' in Conclusion I makes it invalid. Conclusion II does not express the inherent meaning of the statement. Therefore, neither Conclusion I nor II follows.

Ex **7** **Statement** Quality has a price tag. India is allocating lots of funds to education.

Conclusions I. Quality of education in India would improve soon.

II. Funding alone can enhance quality of education.

Sol. (*a*) Only Conclusion I follows because funding along with other factors can improve quality of education but funding alone cannot guarantee the enhancement of quality of education.

Ex **8** **Statement** Industries destroy the natural resources.

Conclusions I. All natural resources are destroyed by industries.

II. No industries, no environmental pollution. **[SSC (10+2) 2008]**

(a) Only Conclusion I follows
(b) Only Conclusion II follows
(c) Neither Conclusion I nor II follows
(d) Both Conclusion I and II follow

Sol. (c) None of the conclusions follows the statement. It is erroneous to assume that all natural resources are destroyed by industries. Similarly, there are other factors which pollute environment.

Practice Corner **3.1**

Build your Confidence...

Directions (Q. Nos. 1-18) In each of the questions given below, there is a statement followed by two conclusions numbered I and II. You have to assume everything in the statement to be true, then consider the two conclusions together and decide which of them logically follows beyond a reasonable doubt from the information given in the statement.

Give answer

(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either I or II follows
(d) if neither I nor II follows
(e) if both I and II follow

1. Statement Unemployment is one of the main reason for the poverty of the country. [Canara Bank (PO) 2009]

Conclusions I. To end poverty, it is required to create employment opportunities.

II. All the people in the country are unemployed.

2. Statement Prostitution is also one of the main reason of AIDS. [UCO Bank (PO) 2011]

Conclusions I. AIDS is an incurable disease.

II. AIDS cannot be completely controlled by banning prostitution only.

3. Statement Sealed tenders are invited from competent contractors experienced in executing construction jobs.

Conclusions I. Tenders are invited only from experienced contractors.

II. It is difficult to find competent tenderers in construction jobs.

4. Statement The nation 'X' faced the increased international opposition due to its decision of performing eight nuclear explosions.

Conclusions I. The citizens of the nation have favoured the decision.

II. Some powerful nations do not want that others may become powerful.

5. Statement The Chief Minister emphasised the point that the Government will try its best for the development of farmers and rural poor.

Conclusions I. The former Government had not tried seriously for the development of these people.

II. This Government will not try seriously for the development of urban poor.

6. Statement America's defense secretary reiterated that they would continue to supply arms to Pakistan.

Conclusions I. Pakistan is incapable of manufacturing arms.

II. It would ensure peace in the region.

7. Statement The majority of Indian labourers belong to unorganised sector and most of them earn very low.

Conclusions I. The labourers belonging to organised sector have better benefits and stability.

II. Some labourers belonging to unorganised sector have regular and certain income.

8. Statement The multinational fast food chains have started their operation in India after facing many problems but association of farmers are ready for competition.

Conclusions I. Association of farmers are not supporting modernisation.

II. Association of Farmers are not ready for competition with the multinational companies.

9. Statements Shyam is not the father of Hari. Hari is the son of Suresh. Suresh has three sons. [Andhra Bank (PO) 2007]

Conclusions I. Hari is the brother of Shyam.

II. Suresh is the father of Hari.

10. Statement In deserts, camels are indispensable for people to travel from one place to another. [SBI (PO) 2009]

Conclusions I. Camels are the only cheapest mode of transport available in deserts.

II. There are plenty of camels in deserts.

11. Statement He emphasised the need to replace the present training programme by other methods which will bring out the real merit of the managers.

Conclusions I. It is important to bring out the real merit of the managers.

II. The present training programme does not bring out the real merit of the managers.

12. Statement The greatest need in India today is not for sophisticated gadgets but for programmes which will provide employment to a large number of people.

Conclusions I. There is an adequate number of sophisticated gadgets in India.

II. Emphasis is being laid on procuring sophisticated gadgets.

13. Statement Company 'X' has marked its product, go ahead and purchase it, if price and quality are your considerations.

Conclusions I. The product must be good in quality.

II. The price of the product must be reasonable.

14. Statement In case of the outstanding candidates, the condition of previous experience of social work may be waived by the Admission Committee for MA (social work).

Conclusions I. Some of the students for MA (social work) will have previous experience of social work.

II. Some of the students for MA (social work) will not have previous experience of social work.

15. Statement It is almost impossible to survive and prosper in this world without sacrificing Ethics and Morality. [NIFT (PG) 2014]

Conclusions I. World appreciates some concepts but may not uphold it.

II. Concept of Ethics and Morality are not practicable in life.

16. Statement The persons who were on the waiting list could finally get berth reservation in Rajdhani Express. [UCO Bank (PO) 2008]

Conclusions I. Wait listed passengers generally find it difficult to get berth reservation in Rajdhani Express.

II. The number of berth available in the Rajdhani Express is small.

17. Statement Crime is a function of the criminal's biological make up and his family relations.

Conclusions I. The incidence of crime is higher in identical twins than in fraternal twins.

II. Families in which parents lack in warmth and affection fail to build a moral conscience in the children. [PNB (PO) 2009]

18. Statement Fashion is a form of ugliness, so is tolerable that we have to alter it every six months.

Conclusions I. Fashion designers do not understand people's mind very well.

II. People by and large are highly susceptible to novelty. [PNB (PO) 2008]

Directions (Q. Nos. 19-35) Each of these questions has a statement followed by two Conclusions I and II. Consider the statement and the following conclusions. Decide which of the conclusion follows from the statement.

Give answer
(a) If Conclusion I follows
(b) If Conclusion II follows
(c) If either Conclusion I or II follows
(d) If neither Conclusion I nor II follows

19. Statement A man must be wise to be a good wrangler. Good wranglers are talkative and boring. [MAT 2014]

Conclusions I. All the wise-persons are boring.

II. All the wise-persons are good wranglers.

20. Statement Fortune favours the brave. [NIFT (PG) 2014]]

Conclusions I. Risks are necessary for success.

II. Cowards die many times before their death.

21. Statement Morning walks are good for health. [CMAT 2014, NIFT (UG) 2014]

Conclusions I. All healthy people go for morning walks.

II. Evening walks are harmful.

22. Statement The best way to escape from a problem is to solve it. [NIFT (PG & UG) 2014, MAT 2013]

Conclusions I. Your life will be dull if you don't face a problem.

II. To escape from problems, you should always have some solution with you.

23. Statement A neurotic is a non-stupid person who behaves stupidly. [NIFT (PG) 2014]

Conclusions I. Neuroticism and stupidity go hand in hand.

II. Normal persons behave intelligently.

24. Statement The best evidence of India's glorious past is the growing popularity of Ayurvedic medicines in the West. [NIFT (PG) 2014]

Conclusions I. Ayurvedic medicines are not popular in India.

II. Allopathic medicines are more popular in India.

25. Statement India's economy is depending mainly on forests. [NIFT (PG) 2014, MAT 2013]

Conclusions I. Trees should be preserved to improve Indian economy.

II. India wants only maintenance of forests to improve economic conditions.

26. Statement Sun is the source of light. [SSC (CGL) 2013]

Conclusions I. Moon is not the source of light.

II. Light has only one source.

27. Statement know nothing except the fact of my ignorance.

Conclusions I. Writer's knowledge is very poor.

II. The world of knowledge is too vast to be explored by a single person.

28. Statement Animals live on oxygen. [SSC (Cabinet Secretariat) 2013]

Conclusions I. Plants do not live on oxygen.

II. Anything that needs oxygen is bound to be animal.

29. Statement Songs always have singers to sing them. [SSC (CPO) 2013]

Conclusions I. Singers make a song.

II. There is no unsung song.

30. Statement A room with flowers looks beautiful. [SSC (FCI) 2012]

Conclusions I. Flowers are grown for decoration of rooms.

II. Room without flowers looks ugly.

31. Statement Religions provide the means for attaining eternal peace. People should follow these means. [SSC (FCI) 2012]

Conclusions I. Religions ensure prosperous life.

II. Religions help people to eradicate poverty.

32. Statement The education system in India needs to emphasize on areas related to agriculture, technology and tourism instead of basic and pure sciences.

Conclusions I. We have already excelled in these fields.

II. We need another green revolution to feed our burgeoning population and our youth, which makes 50% of our population, needs jobs for survival.

33. Statement According to the education minister, the students will have the option of skipping the board examination for class X from this academic year to ease some pressure on them.

Conclusions I. Class X board examination was compulsory till the last academic year.

II. Students were traumatized by the pressure created by these board exams.

34. Statement Power consumption in every family has been doubled during the last 5 yr. [NIFT (UG) 2012]

Conclusions I. There is a lot of development in the society.

II. Power rates have become cheaper.

35. Statement Domestic demand has been increasing faster than the production of indigenous crude oil.

Conclusions I. Crude oil must be imported.

II. Domestic demand should be reduced.

Response & Interpretations **(3.1)**

1. (*a*) Conclusion I is valid because if unemployment is the main reason behind poverty, then creating employment opportunities is the need of the hour. Conclusion II is invalid because of the presence of word 'all'.

2. (*b*) Prostitution is not the only reason of AIDS. It is one of the main reasons of this disease. Hence, banning only prostitution cannot work 100% to control this disease. It means other factors must be considered also. Therefore, II is a valid conclusion. Conclusion I is invalid as it has not been discussed in the statement that AIDS is curable or not.

3. (*a*) Conclusion I is obvious from the given statement. Conclusion II is a invalid conclusion because availability of competent tenderers has not been mentioned.

4. (*b*) Nuclear explosion is not the result of the favour by the citizens. Hence, Conclusion I does not follow. However, increase in the international opposition is due to the fact that some powerful nations don't want that others may become powerful.

5. (*d*) From the commitment of the present Government, it cannot be concluded that former Government did not do anything serious about the development nor does it mean that present Government will not do anything for the development of other sectors, hence none of the conclusion follows.

6. (*d*) Pakistan's ability to manufacture arms is not being talked about in the statement. So, Conclusion I does not follow.

The fact Conclusion II cannot be deduced from the statement. So, Conclusion II also doesn't not follow.

7. (*b*) It is given in the statement that most of the labourers belonging to unorganised sector earn very low and uncertain income, it means that there are some labourers who earn regular and certain income. Hence, Conclusion II definitely follows from the statement.

8. (*d*) Conclusion I is totally unrelated to the statement and Conclusion II is contrary to the statement. Hence, none of the conclusions follows.

9. (*b*) Conclusion I is invalid conclusion as relation between Hari and Shyam is not given. Conclusion II is valid because if Hari is the son of Suresh, then Suresh will definitely be the father of Hari.

10. (*d*) None follows as the given statement merely says that camels are very useful for deserts. It does not state whether they are cheap or available in large number.

11. (*e*) Both the conclusions follow from the statement. Conclusion I is the direct result of the statement. Conclusion II follows because in the given statement, there is a need to replace the present system with a new one.

12. (*d*) The statement says that greatest need in India is not for sophisticated gadgets but for programmes but this does not mean that there is an adequate number of sophisticated gadgets. Secondly, there is a need for programmes but it cannot be concluded that emphasis is being laid on procuring sophisticated gadgets. Hence, none of the conclusions follows.

13. (*e*) It is clear from the statement that a product of company 'X' has good quality and is available at a reasonable price. Hence, both the conclusions follow.

14. (*e*) Both the conclusions follow. The waiver is incorporated because some of the students for MA will not have previous experience and some of the students will have previous experience of social work.

15. (*e*) Conclusions I and II convey almost the same meaning that principles related to Ethics and Morality seem to be good but are not practicable in real life. Hence, both the conclusions follow.

16. (*a*) Conclusion I is a valid conclusion as the use of word 'could' implies a difficulty in obtaining reservation but Conclusion II is invalid as it is not certain.

17. (*d*) Both I and II are invalid as statement itself is vague and ambiguous which is unable to make proper connectivity with the given conclusions.

18. (*d*) Both I and II are invalid because they lack proper connectivity with the given statement.

19. (*d*) According to the statement, good wranglers are wise-men. But it doesn't mean that all wise-men are good wranglers. So, neither I nor II follows.

20. (*a*) According to the statement, only those who tackle situation bravely achieve success. So, Conclusion I follows, however Conclusion II is ambiguous with concern to the given statement and so does not follow.

21. (*d*) In the statement it is said that morning walks are good for health. But it does not mean that all the healthy persons go for morning walks. Hence, Conclusion I does not follow. Also, nothing is said about the evening walks in statement. Thus, Conclusion II also does not follow.

22. (*b*) The given statement does not tell anything about life. It only tells about problems and the way to escape from them. Hence, Conclusion II follows.

23. (*a*) It is mentioned in the statement that a neurotic is a person who behaves stupidly. So, Conclusion I follows. The behaviour of normal persons cannot be deduced from the given statement. So, Conclusion II does not follow.

24. (*d*) The popularity of Ayurvedic or Allopathic medicines in India is not being talked about in the statement.

So, neither I nor II follows.

25. (*a*) I follows because trees are a part of forest and India's economy depends mainly on forest. II is not correlated with the statement. So, it does not follow.

Hence, Statement I follows.

26. (*d*) Neither Conclusion I nor II follows. Sun is the source of light, it does not imply that light has only one source.

27. (*b*) Here, only Conclusion II follows because this statement is a quote given by the Greek philosopher Socrates which means that knowledge of word is too vast to be explored by a single person.

28. (*d*) None of the conclusions follows. 'Animals live on oxygen' does not imply that other things do not need oxygen.

29. (*a*) Any written piece is recognised as song when it is sung by a singer. Therefore, only Conclusion I follows.

30. (*d*) Neither of the conclusions is true. A room may look beautiful with other decorative items.

31. (*d*) None of the conclusions is correct.

32. (*b*) Only Conclusion II follows.

33. (*a*) Only Conclusion I follows.

34. (*d*) Neither of the conclusions follows from the given statement.

35. (*b*) The domestic demand of crude oil should be decreased.

Type 2 More Than Two Statements and Conclusions Based

In this type of questions, a statement/statements is/are given followed by some conclusions. Choose the conclusion which follows the given statement.

Directions (Example Nos. 9-13) Which of the conclusions can be drawn from the statement.

***Ex* 9** **Statement** Many business offices located in buildings having two to eight floors. If a building has more than three floors, it has a lift.

(a) All floors may be reached by lifts
(b) Only floors above the third floor have lifts
(c) Fifth floor has lifts
(d) Second floors do not have lifts

Sol. (c) It is clear from the given statement.

***Ex* 10** **Statement** All guilty politicians were arrested. Ranjan and Kamlesh were among those arrested.

(a) All politicians are guilty
(b) All arrested people are politicians
(c) Ranjan and Kamlesh were not politicians
(d) Ranjan and Kamlesh were guilty

Sol. (*d*) It is clear from the given statement.

***Ex* 11** **Statement** All the students in my class are intelligent. Kaushik is not intelligent. **[SSC (10+2) 2013]**

(a) Some students are not intelligent
(b) Non-intelligent are not students
(c) Kaushik is not a student of my class
(d) All other than Kaushik are intelligent

Sol. (c) As all the students in my class are intelligent and Kaushik is not intelligent, so Kaushik is not a student of my class.

***Ex* 12** **Statements** A. Karan Johar is a good director. **[CLAT 2013]**
B. Directors are intelligent.

(a) All intelligent are directors
(b) Karan Johar is intelligent
(c) Both (a) and (b)
(d) None of these

Sol. (*b*) As directors are intelligent and Karan Johar is good director, so Karan Joahar is intelligent.

***Ex* 13** **Statement** Most of the mobile phones in that shop are costly.

(a) Some of the mobile phones in that shop are costly
(b) Mobile phone of brand X are costly in that shop
(c) None of the mobile phones in that shop is cheap
(d) Some of the mobile phones in that shop are cheap
(e) None of the above

Sol. (*d*) From the given statement, the conclusion 'some of the mobile phones in that shop are cheap' follows.

Directions (Examples Nos. 14-16) In the following questions, two statements are given followed by two Conclusions I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follow from the given statements. Indicate your answer.

***Ex* 14** **Statements** A. AIDS is a killer disease.

B. It is easy to prevent AIDS than to treat it.

Conclusions I. AIDS prevention is very expensive.

II. People will not cooperate for AIDS prevention.

(a) Only Conclusion I follows
(b) Only Conclusion II follows
(c) Neither Conclusion I nor II follows
(d) Both Conclusions I and II follow

Sol. (c) None of the conclusions follows. If one takes precaution he/she may prevent it. It does not imply that AIDS prevention is very expensive.

***Ex* 15** **Statements** A. Teaching is an art.

B. Drawing is also an art.

Conclusions I. All artists are teachers.

II. All artists know to draw pictures.

(a) Only Conclusion I follows
(b) Only Conclusion II follows
(c) Neither Conclusion I nor II follows
(d) Both Conclusions I and II follow

Sol. (c) None of the conclusions follows.

***Ex* 16** **Statements** A. People who live in the big city crowd into jammed trains or buses.

B. They cross the street in competition with high powered motorcars.

Conclusions I. Travelling is very difficult for city people

II. Traffic jam is inevitable in big cities

(a) Only Conclusion I follows
(b) Only Conclusion II follows
(c) Neither Conclusion I nor II follows
(d) Both Conclusion I and II follow

Sol. (*a*) From both the statements, it is clear that people who live in city face problems in travelling. Therefore, only Conclusion I follows.

Practice Corner **3.2**

Build your Confidence...

Directions (Q. Nos. 1-3) In the following questions, one or more statements are given followed by four conclusions (a), (b), (c) and (d). You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follow from the given statements.

[SSC (CGL) 2013]

1. **Statements** I. Ravi has five pens.

II. No one else in the class has five pens.

Conclusions

(a) All students in the class have pens

(b) All students in the class have five pens each

(c) Some of the students have more than five pens

(d) Only one student in the class has exactly five pens

2. **Statement** To pass the examination one must work hard. **[CMAT 2013]**

Conclusions

(a) Examination is related with hard work

(b) All those who work hard pass

(c) Examination causes some anxiety and those who work hard overcome it

(d) Without hard work, one does not pass

3. **Statement** This book can help because all good books help.

Conclusions

(a) This is not a good book (b) This is a good book

(c) No good book help (d) Some good books help

Directions (Q. Nos. 4-8) In each of the following questions, two statements are given followed by two Conclusions I and II. You have to consider the two statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions, if any follow from the given statements.

4. **Statements** I. Education is a process of lighting.

II. Mind requires light to enlighten the core of cognitive aspect. **[SSC (10+2) 2013]**

Conclusions I. Education is a light which removes the darkness of mind.

II. Education is a static process for mind.

(a) Only Conclusion I follows

(b) Only Conclusion II follows

(c) Both Conclusions I and II follow

(d) Neither Conclusion I nor II follows

5. **Statements** I. Best performance in Olympics fetches a gold medal.

II. Player 'X' got gold medal but later was found to be using a prohibited drug.

Conclusions I. 'X' should be allowed to keep the gold medal.

II. Gold medal should be withdrawn and given to the next person.

(a) Only Conclusion II follows

(b) Neither Conclusion I nor II follow

(c) Both Conclusions I and II follow

(d) Only Conclusion I follows

6. **Statements** I. There are monks among those who are felicitated for remarkable social service.

II. Jitananda and Vidyananda are among those felicitated.

Conclusions

(a) Jitananda and Vidyananda did remarkable social service

(b) All monks do social service

(c) Jitananda and Vidyananda are not monks

(d) All monks are felicitated

7. **Statements** I. Science has brought the gadgets of happiness, prosperity and wealth.

II. Science has not solved the problems of overpopulation. **[SSC (CGL) 2007]**

Conclusions I. Overpopulation is due to unscientific thinking.

II. Science has not helped world peace.

(a) Only Conclusion I follows

(b) Only Conclusion II follows

(c) Both Conclusions I and II follow

(d) Neither Conclusions I and II do not follow

8. Statements I. Conflicts in mind create tension

II. Resolution of conflict leads to good mental health. **[SSC (CGL) 2007]**

Conclusions I. One becomes very hefty and strong by resolving one's conflicts.

II. Freedom from conflict leads to good mental health.

(a) Only Conclusion I follows
(b) Only Conclusion II follows
(c) Neither Conclusion I nor II follows
(d) Both Conclusions I and II follow

Direction (Q. No. 9) In the following question, two statements are given followed by three conclusions. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions if any follow from the given statements **[SSC (CGL) 2013]**

9. Statements I. Water has shape, has volume.

II. The knowledge is like water, flowed from one side to other.

Conclusions I. The knowledge is interdisciplinary

II. The knowledge is bound within a specific area.

III. The knowledge influences the core of mental activity directly.

(a) Only Conclusion I follows
(b) Only Conclusion II follows
(c) Both Conclusions I and II follow
(d) Both Conclusions I and III follow

10. Examine the following statements

I. Only those who have a pair of binoculas become the members of the birdwatcher's club.

II. Some members of the birdwatcher's club have participate cameras.

III. Those members who have cameras cannot photo-contests.

Which of the following conclusions can be drawn from the above statements?

(a) All those who have a pair of binoculars are members of the birdwatcher's club
(b) All members of the birdwatcher's club have a pair of binoculars
(c) All those who take part in photo-contests are members of the birdwatcher's club
(d) No conclusion can be drawn

Directions (Q. Nos. 11-15) Two statements are given followed by two Conclusions I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You are to decide which of the given conclusions, if any, follow from the given statements. Indicate your answer.

11. Statements A. No teacher comes to the school on a bicycle.

B. Anand comes to the school on a bicycle. **[SSC (CPO) 2012]**

Conclusions I. Anand is not a teacher.

II. Anand is a student.

(a) Conclusion I alone can be drawn
(b) Conclusion II alone can be drawn
(c) Both conclusions can be drawn
(d) Both conclusions cannot be drawn

12. Statement A. Most of the 64 number buses go to my office.

B. This is 64 number bus. **[SSC (CGL) 2008]**

Conclusions I. This bus goes to my office.

II. This bus does not go to my office.

(a) Conclusion I and II both can be drawn
(b) Conclusion II alone can be drawn
(c) Conclusion I alone can be drawn
(d) Conclusions I and II both cannot be drawn

13. Statements A. Vitamin B-complex is the best for health.

B. Fruits contain Vitamin B-complex.

Conclusions I. We should grow fruits.

II. Fruits are good for health.

(a) Only Conclusion I can be drawn
(b) Only Conclusion II can be drawn
(c) Both Conclusions I and II can be drawn
(d) Neither Conclusions I nor II can be drawn

14. Statements A. Some Indians are educated.

B. Educated persons like small families.

Conclusions I. All small families are educated.

II. Some Indians like small families.

(a) Only I can be concluded
(b) Only II can be concluded
(c) Both I and II can be concluded
(d) Neither I nor II can be concluded

15. **Statements** A. In comparision with 2 decades ago, India is producing more two wheelers.
B. The quality of such vehicles has also been improved.

Conclusions I. We are exporting two wheelers.
II. Our two wheeler industries have done commendable progress.

(a) Only Conclusion II can be drawn
(b) Only Conclusion I can be drawn
(c) Neither Conclusion I nor II can be drawn
(d) Both the Conclusions I and II can be drawn

Directions (Q. Nos. 16-18) In each of the following questions, a statement/group of statements is given followed by four conclusions. Choose the conclusion which logically follows from the given statements.

16. **Statement** Most dresses in that shop are expensive. **[SSC (CPO) 2006]**

(a) Some dresses in that shop are expensive
(b) There are cheap dresses also in that shop
(c) Handloom dresses in that shop are cheap
(d) There are no cheap dresses available in that shop

17. **Statement** A. All the students in my class are intelligent.
B. Rashmi is not intelligent.

(a) Rashmi should do hard labour
(b) Rashmi is not the student of my class
(c) Some students are not intelligent
(d) Rashmi is a sports person

18. **Statements** A. The constitution assures the fundamental rights.
B. Parliament has right to amend the constitution. **[SSC (CGL) 2013]**

Conclusions I. Parliament included fundamental rights in the constitution.
II. Parliament did not assure the fundamental rights.

(a) Only Conclusion I follows
(b) Only Conclusion II follows
(c) Both Conclusion I and II follow
(d) None of the above

19. A research study recorded that the number of unemployed educated youth was equal to the number of unemployed uneducated youth. It was concluded by the researchers that being educated does not enhance the probability of being employed.

Which of the following information would be required to validate the above conclusion? **[IIFT 2013]**

(a) The number of unemployed educated and uneducated people in other age groups
(b) The number of organisations employing youth
(c) The percentage of unemployment in educated youth versus percentage of unemployment in uneducated youth
(d) The percentage increase in number of educated youth versus last year

20. During the last summer vacation, Ankit went to a summer camp where he took part in hiking, swimming and boating. This summer, he is looking forward to a music camp where he hopes to sing, dance and learn to play the guitar.

Based on the above information, four conclusions, as given below, have been made.

Which one of these logically follows from the information given above?

(a) Ankit's parents want him to play the guitar
(b) Ankit prefers music to outdoor activities
(c) Ankit goes to some type of camp every summer
(d) Ankit likes to sing and dance

21. Ten new TV shows started in January, 5 sitcoms, 3 drama and 2 news magazines. By April only seven of the new shows were still on, five of them being sitcoms.

Based on the above information, four conclusions, as given below, have been made. Which one of these logically follows from the information given above?

(a) Only one news magazine show is still on
(b) Only one of the drama shows is still on
(c) At least one discontinued show was a drama
(d) Viewers prefer sitcoms over drama

22. Examine the following statements

I. None but students are members of the club.
II. Some members of the club are married persons.
III. All married persons are invited for dance.

Which one of the following conclusions can be drawn from the above statements?

(a) All students are invited for dance
(b) All married students of the club, are invited for dance
(c) All members of the club are married persons
(d) None of the above

23. Examine the following statements

I. I watch TV only if I am bored.
II. I am never bored when I have my brother's company.
III. Whenever I go to the theater I take my brother along.

Which one of the following condusigris is valid in the context of the above statements?

(a) If I am bored, I watch TV
(b) If I am bored, I seek my brother's company
(c) If I am not with my brother, then I watch TV
(d) If I am not bored, I do not watch TV

24. Consider the following statements

I. All artists are whimsical.
II. Some artists are drug addicts.
III. Frustrated people are prone to become drug addicts

From the above three statements it may concluded that

(a) artists are frustrated
(b) some drug addicts are whimsical
(c) all frustrated people are drug addicts
(d) whimsical people are generally frustrated

25. Consider the following three statements

I. Only students can participate in the race.
II. Some participants in the race are girls.
III. All girl participants in the race are invited for coaching.

Which one of the following conclusions can be drawn from the above statements?

(a) All participants in the race are invited for coaching
(b) All students are invited for coaching
(c) All participants in the race are students
(d) None of the above

Response & Interpretations **(3.2)**

1. (*d*) From both the statements it is clear that only Ravi has five pens in the class. Therefore, only Conclusion (d) follows.

2. (*d*) Without hard word, one does not pass can be concluded.

3. (*b*) This is a good book can be concluded.

4. (*a*) Only Conclusion I follows.

5. (*a*) If a player is found guilty of doping, his medal is confiscated. Therefore, only Conclusion II follows.

6. (*a*) From both the statements it is clear that Conclusion I is true.

7. (*d*) Neither Conclusion I nor II follows. Overpopulation is a result of several factors. Therefore, only unscientific thinking cannot be held responsible for overpopulation.

8. (*b*) The second statement clearly corroborates the Conclusion II.

9. (*a*) From the statements it is clear that knowledge is interdisciplinary. Thus, Conclusion I follows.

10. (*b*) Only those who have binoculars can be a part of birdwatcher's club, hence all the members of birdwatcher's club will have binoculars for sure. But all those who have binoculars may not be part of birdwatcher's club.

11. (*a*) Anand comes on a bicycle which is not used by any teacher. Hence, Anand cannot be a teacher. Therefore, I is valid. II is not valid because if Anand is not a teacher, he is either a student or a staff member.

12. (*d*) Presence of word 'most' in the statement makes both I and II ambiguous. Hence, none of I and II can be drawn.

13. (*b*) I does not make any connection with the given statement but II does. Hence, I cannot be drawn but II can be.
Fruits ⟶ B-Complex ⟶ Good for health

14. (*b*) I cannot be concluded because of the presence of word 'all' in it. II is the obvious choice from both the statements.

15. (*a*) I is invalid as export is not the subject of discussion in the given statement. II is a valid conclusion because there has been increase in production of two wheelers with improved qualities.

16. (*b*) Most dresses are expensive means some are cheap also.

17. (*b*) If all the students in a particular class are intelligent and Rashmi is not intelligent, then it means Rashmi is not the student of that particular class which does not have a single student who is not intelligent.

18. (*b*) From the above two statements, it is not clear whether the parliament can assure the fundamental rights or not.

19. (*c*) Option (c) is required to validate the conclusion stated in the given passage.

20. (*c*) No reasons are specified in the question for going to different camps. As, Ankit has been going to different camps since the past two year, so it can be said that he goes to some type of camp every summer.

21. (*c*) No reason is provided for discontinuation of any programme. Hence, option (d) is not correct. Three shows were discontinued. As no sitcoms shows were discontinued, they must be either drama or news magazine. Now, there were only two news magazines. So, atleast one discontinued show was a drama. Hence, option (c) is correct.

22. (*b*) It is given that all married persons are invited for the dance and some members of the club are married persons. So, all married students of the club are invited for the dance.

23. (*d*) The pre-condition for watching TV is to get bored. So, If I am not bored, I do not watch TV. So, option (d) is correct.

24. (*b*) All artists are whimsical and some of the artists are drug addicts. Thus, all those artists who are drug addicts are also whimsical. Hence, some drug addicts are whimsical.

25. (*c*) From Statement I, it can be concluded that 'All participants in the race are students'. Since, it is given in Statement III that 'All girl participants in the race are invited for coaching'. So options (a) and (b) cannot be concluded. Hence, answer is option (c).

Master Exercise

Take a Leap...

Direction (Q. No. 1) On the basis of statements given below, choose the option which is the correct conclusion.

1. **Statements** A. All the students in my class are intelligent.
B. Surbhi is not intelligent.
(a) Surbhi should do hard labour
(b) Surbhi is not the student of my class
(c) Some students are not intelligent
(d) Surbhi is the student of my class

Directions (Q. Nos. 2 - 7) In each of these questions, a statement is given followed by two conclusions numbered I and II. You have to assume everything in the statement to be true and then consider the two conclusions together to decide which of them logically follows beyond a reasonable doubt from the information given in the statement.

Give answer
(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if both the Conclusions I and II follow
(d) if neither Conclusion I nor II follows

2. **Statement** Most Indians are aware that they have a great heritage, but few would include science in it. **[SSC (CGL) April 2014]**

Conclusions I. Many Indians consider science to have made Indian heritage great.
II. Many Indians are not aware that India has a great scientific heritage.

3. **Statements** Leaders are human beings. All human beings need rest. **[SSC (Steno) 2013]**

Conclusions I. All human beings are not leaders.
II. Leaders need rest.

4. **Statement** This world is neither good nor evil; each man manufactures a world for himself.

Conclusions I. Some people find this world quite good.
II. Some people find this world quite bad.

5. **Statement** Reacting to the news of suicides by the farmers, the Prime Minister stated that his government will make every possible effort for the upliftment of poor farmers and farmhands.

Conclusions I. Only farmers are attempting suicides due to poverty and debt.
II. No serious effort has been made till now for the upliftment of any section of society.

6. **Statement** Workers feel highly motivated when they get sense of involvement by participating in the management of companies.

Conclusions I. Workers should be motivated to produce more.
II. Workers should be allowed to participate in the management of companies.

7. **Statement** Power consumption in every family has been doubled during the last five years.

Conclusions I. There is a lot of development in the society.
II. Power rates have become cheaper.

Directions (Q. Nos. 8-19) In each of the questions below is given a statement followed by two conclusions numbered I and II. You have to assume everything in the statement to be true, then consider the two conclusions together and decide which of them logically follows beyond a reasonable doubt from the information given in the statement.

Give answer

(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either Conclusion I or II follows
(d) if neither Conclusion I nor II follows
(e) if both Conclusions I and II follow

8. Statement To cultivate interest in reading, the school has made it compulsory from June, 1996 for each student to read two books per week and submit a weekly report on the books.

Conclusions I. Interest in reading can be created by force.

II. Some students eventually will develop interest in reading.

9. Statement Modern man influences his destiny by the choices he makes, unlike in the past.

Conclusions I. Earlier, there were less options available to them.

II. There was no desire in the past to influence the destiny.

10. Statement While presenting a stage show recently, the famous actor declared that he has a practice of either taking full payment or none for his stage shows.

Conclusions I. The actor has taken full payment for his recent stage show.

II. The actor did not take any money for his recent stage show.

11. Statement From the next academic year, students will have the option of dropping Mathematics and Science for their school leaving certificate examination.

Conclusions I. Students, who are weak in Science and Mathematics, will be benefitted.

II. Earlier students did not have the choice of continuing their education without taking these subjects.

12. Statement As far as the rate of literacy is concerned, there is hardly any difference between the States of Kerala and Paschim Bengal, but one is ahead of the other in respect of the percentage of population employed.

Conclusions I. Unemployment is more is Kerala than in Paschim Bengal.

II. Paschim Bengal has higher unemployment than Kerala.

13. Statement Until our country achieves Economic equality and Political freedom, Democracy would be meaningless.

Conclusions I. Political freedom and Democracy go hand in hand.

II. Economic equality leads to real Political freedom and Democracy.

14. Statement From all available cutural records, it is evident that even in ancient India, both the masters and disciples valued not the quantity but the quality of knowledge.

Conclusions I. Giving importance to quantity of knowledge is meaningless.

II. There was an identity of educational values between teachers and students in ancient India.

15. Statement In a one day cricket match, the total runs made by a team were 200, out of which 160 runs were made by spinners.

Conclusions I. 80% of the team consists of spinners.

II. The opening batsmen were spinners.

16. Statement Inspite of the claim of Government, of terrorism being under check, their nefarious activities still continue.

Conclusions I. The terrorists have not come to an understanding with the Government.

II. The Government has been constantly telling a lie.

17. Statement The use of non-conventional sources of energy will eliminate the energy crisis in the world.

Conclusions I. Modern technology is gradually replacing the conventional source of energy.

II. The excessive exploitation of environment has led to the depletion of conventional sources of energy.

18. Statement Computer advertisements now fill magazine pages but the real computer revolution in India is taking place quietly and is a likely organisation of Government.

Conclusions I. Both the Central and State Government are computerising rapidly.

II. The Government does not fill the magazine pages with its computer advertisements.

19. Statement Cases of bride-burning for dowry are not uncommon.

Conclusions I. Inspite of anti-dowry law, the ill practice still continues.

II. The punishment inflicted on the party concerned is not hard enough.

20. A Statement is given followed by three Conclusions I, II and III. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follows from the given statement. **[SSC (Constable) 2013]**

Statement Comic books contain pictures.

Conclusions I. All books contain pictures.

II. Books may or may not contain pictures.

III. Books other than the comic books do not contain pictures.

(a) Only Conclusion I follows
(b) Only Conclusion II follows
(c) Only Conclusion III follows
(d) Neither Conclusion I nor II follows

21. What do you conclude from the following two statements? **[SSC (10+2) 2008]**

I. Hybrid plants are resistant to fungus.
II. Fungal infection reduces the life of plants

(a) For a long life-span grow hybrid plants
(b) Fungus attacks hybrid plants
(c) Yield is more in hybrid plants
(d) All plants are hybrid plants

22. Only six roads A, B, C , P, Q and R connect a military camp to the rest of the country. Only one out of A, P and R is open at any one time. If B is closed, so is Q . Only one of A and B is open during storms. P is closed during floods. In this context, which one of the following statements is correct? **[CSAT 2012]**

(a) Under normal conditions only three roads are open
(b) During storms at least one road is open
(c) During floods only three roads are open
(d) During calamities all roads are closed

23. Four political parties W, X,Y and Z decided to set up a joint candidate for the coming parliamentary elections. The formula agreed by them was the acceptance of a candidate by most of the parties. Four aspiring candidate A, B, C and D approached the parties for their tickets.
A was acceptable to W but not to Z.
B was acceptable to Y but not to X.
C was acceptable to W and Y.
D was acceptable to W and X.

When candidate B was preferred by W and Z, candidate C was preferred by X and Z and candidate A was acceptable to X but not to Y, who got the ticket? **[CSAT 2012]**

(a) A
(b) B
(c) C
(d) D

24. Consider the following statements

I. All X-brand cars parked here are white.
II. Some of them have radial tyres.
III. All X-brand cars manufactured after 1986 have radial tyres.
IV. All cars are not X-brand.

Which one of the following conclusions can be drawn from the above statements? **[CSAT 2012]**

(a) Only white cars are parked here
(b) Some white X-brand cars with radial tyres are parked here
(c) Cars other than X-brand cannot have radial tyres
(d) Most of the X-brand cars are manufactured before 1986

25. Consider the following statements

I. The Third World War, if it ever starts, will end very quickly with the possible end of civilisation. It is only the misuse of nuclear power which will trigger it.
II. Based on the above statement, which one of the following inferences is correct? **[CSAT 2012]**

(a) Nuclear power will be used in the Third World War
(b) There will be no civilisation left after the Third World War
(c) The growth of nuclear power will destroy civilisation in the long run
(d) The Third World War will not take place

Response & Interpretations (Master Exercise)

1. (*b*) It is the obvious choice.

2. (*b*) From the given statement, only Conclusion II follows.

3. (*b*) From the given statements,

'Leaders are human beings' and

'All human beings a need rest'

Hence, 'Leaders need rest' follows.

4. (*c*) Both conclusions follow as it is human thinking that makes the world appear good or evil.

5. (*d*) Both the conclusions are not related to the statement Hence, neither I nor II follows.

6. (*b*) Only Conclusion II follows. As the workers feel motived when they get sense of involvement by participating in the management of companies, so they should be allowed to participate.

7. (*d*) Neither of the conclusions follows from the given statement.

8. (*b*) Interest in reading cannot be inculcated by force. Hence, Conclusion I does not follow. However, compulsory reading will develop a gradual inclination towards reading. Hence, Conclusion II follows.

9. (*a*) There was desire in the past to influence the destiny but there were less options available that time, hence Conclusion I follows.

10. (*c*) As given in the condition in the statement, the actor will either take the full payment for his recent show or will not take any money for the same. Hence, either of the conclusions follows.

11. (*e*) Both the conclusions follow. Since the option is available from next year, it implies that this option was not available earlier. Secondly, students who are weak in Mathematics and Science will be benefitted.

12. (*c*) It is not given in the statement that which of the two states has more unemployment problem. Therefore, it may be either Kerala or Paschim Bengal.

13. (*a*) As in the given statement, Economic equality and political freedom are related with Democracy, so Conclusion I follows from the statement but Economic equality and Political freedom are not related with each other. Hence, Conclusion II does not follow.

14. (*b*) Only Conclusion II follows, since both the teachers and students valued the quality of knowledge. So, it can be concluded that there existed an identity of educational values between teachers and students in ancient India.

15. (*d*) Team may consist of the number of spinners more or less than that given in Conclusion I. Hence, Conclusion I does not follow. Secondly, it is not known from the statement that opening batsman were spinners. Hence, Conclusion II does not follow.

16. (*a*) Since killing still continues, the terrorists may not have come to an understanding with the Government.

17. (*d*) The statement speaks of a suggestion regarding benefits of the use of non-conventional sources of energy. It is not given whether non-conventional methods are replacing conventional methods. Hence, Conclusion I does not follow. Conclusion II, also does not follow as it is not in the light of the statement.

18. (*a*) It is given in the statement that computer revolution is taking place quietly and is a likely organisation of the Government which means that computerisation is being done rapidly. Hence, I is valid and II is invalid.

19. (*e*) I is valid as the statement discusses about dowry and bride-burning. II is valid because if punishment was hard enough, then such ill practices would not have happened.

20. (*b*) Only Conclusion II follows. Comic books and some other books may contain pictures. Some books do not contain pictures.

21. (*a*) Clearly, Conclusions I follows. Hybrid plants are resistant to fungus and hence the life-span of hybrid plants is greater.

22. (*b*) Consider option (a). In this case, if R is open, then B, C and Q can also be open. Hence, option (a) is not true. In storms either A or B is open. Hence, option (b) is definitely correct. During calamities atleast one road is open. So, option (d) is not correct. During floods, at most two roads can be open. So, option (c) is not correct. So, option (b) is correct.

23. (*c*) According to the given conditions, A is accepted by W and X. B is accepted by Y, W and Z. C was accepted by W, Y, X and Z. D was accepted by W and X.
So, C is accepted by all the four parties.

24. (*b*) All X-brand cars parked here are white and some of them have radial tyres. Hence, some white X-brand cars parked here have radial tyres.

25. (*a*) There is a possibility of end of civilisation with the use of nuclear power which will be used in Third World War which if starts ever.

4

Course of Action

A Course of Action is a step taken to counter a given situation, problem or circumstance, so that either it may completely solve the problem or it may reduce the complexity of the problem and improve the situation.

Different types of questions covered in this chapter are as follows

- Based on Two Courses of Action
- Based on Three Courses of Action

In daily life, a person faces problems with his work, travel, administration, society, friends and family etc. These problems are needed to be solved and the way of acting or dealing to solve these problems or situations is called the correct course of action. A course of action is considered appropriate or acceptable only when it completely or partially solves the problem, otherwise not. The problem or situation may vary in different circumstances and so its solution will vary. So, a careful analysis of the problem is required to reach the correct course of action.

There can be two types of problems as discussed below

1. Simple Problem

These problems can be solved by simple action and there is no need of planned, accelerated and solid action to get rid of such problems. In fact, such problems need a slight improvement to be cured and this slight improvement can be made by putting a simple effort.

e.g., If you get tired after 2-3 h work, then your tiredness is a simple problem for you and you can solve this problem *i.e.,* refresh yourself by having a cup of tea or by taking a glass of juice or by any other simple means. Similarly, other simple problems like indiscipline, noise etc., can be solved by simple and easy action.

2. Complex Problem

In this type of problems, due to larger intensity, a planned, accelerated and solid action is required to get rid of it. In other words, a simple action or effort is useless in this case and a perfect strategy is needed to take an accelerated solid action.

e.g., If a major train accident takes place, it comes under the category of complex problems and to control this unwanted situation a rescue operation must be started to prevent possible increase in casualties. There are no doubts that in case of such accidents the rescue operation must be started as soon as possible and according to an accelerated proper planning.

Further, it is possible that such rescue operations may not provide complete solution because of the complexity of the problem but it is sure that the action taken in the form of rescue operation reduces or minimises the intensity of a major problem like train accident. It means the action taken solves the problem to the some extent.

Conditions for the Correctness of 'Course of Action'

A 'course of action' will be correct, if

(i) it solves or reduces or minimises the problem.

(ii) suggested solution is a practical one.

How to determine whether a 'course of action' solves/reduces/minimises a problem?

A. On the basis of established facts we can check the validity of a given course of action *i.e.*, whether the suggested solution solves/reduces/minimises the problem or not. An established fact may be scientifically established or universally or socially acknowledged.

Let us see the following example

Statement A 10 yr old boy was caught in a bus while attempting to steal the wallet of a person.

Courses of Action

I. The boy should be handed over to child welfare society. (*correct*)

II. The boy should be beaten severely. (*incorrect*)

Sol. It is a socially established fact that child criminals should be made to mend their ways instead of being treated as punishable wretches. Hence, the Course of Action I is correct one as the child welfare society can make the boy mend his ways.

B. If a solution suggested by 'course of action' seems to be correct on the basis of our experiences, then the given 'course of action' will solve/reduce/ minimise the problem otherwise the suggested solution is incorrect.

Let us see the following example

Statement Casteism has become a base for our life and that too, to the alarming extent.

Course of Action Strict legislation must be passed to promote intercaste marriages. (*incorrect*)

Sol. Applying our past experiences, if we think over the suggested solution by the given 'course of action', we come to our conclusion very easily. Our previous experiences tell that legislation has been useless in the case of dowry. Casteism is equally deep rooted problem of our society.

So, if legislation has been proved failure for dowry cases, then how can one expect that it can do wonders in case of casteism. Hence, on the basis of our past experiences, the given course of action is incorrect.

Let us see another example

Statement Female foeticide is still a major problem of our country.

Course of Action Efforts should be made to eradicate illiteracy among women. (*correct*)

Sol. Our previous experiences tell that so many social problems can be solved by making people aware through literacy or by any other means. Hence, the given course of action is correct.

C. Sometimes a new problem may come our way and we do not have any previous experience about it. In this case, our logical and reasoning ability help us in deciding the validity of solution suggested by the given course of action.

Let us see the following example

Statement The police has failed to protect the elderly citizens of the society as 10 old persons were killed in different areas in the last two days.

Courses of Action

I. Police and youth should be asked to take special care of old people. (*correct*)

II. Government should bring a legislation against killing of elderly people. (*incorrect*)

Sol. Our logic says that I is correct as we must take care of those who are likely to get affected by this new problem. II is a proper course of action, yet it is invalid because our logical sense says that punishment for murderers is already in our legislation.

D. In some cases, the validity of the solution suggested by the given course of action is decided on the basis of prevailing notions of truth. In other words, we can say that sometimes, as per the societal norms, it is determined whether a particular course of action solves/ reduces/minimises the given problem or not.

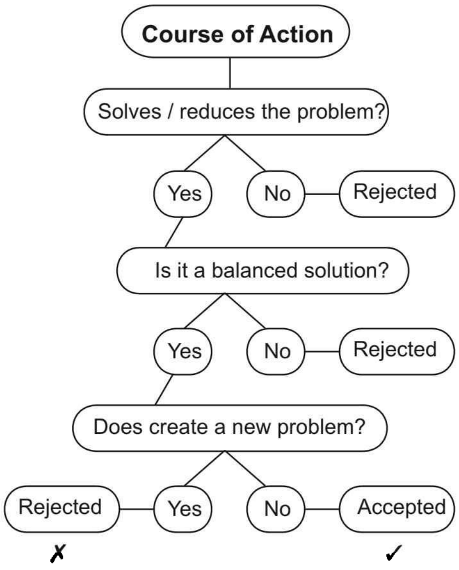
Let us see the following example

Statement Balwant got angry and beat his son severely.

Course of Action Balwant should be publicly caned. (*incorrect*)

Sol. No doubts, caning would be an accepted punishment for medieval periods but today public-beating is not acceptable at all. Even for the most serious offences our societal norms do not allow such kind of punishment.

Following flow chart will give a step-by-step method for check correctionness of a course of action


Course of Action
Solves / reduces the problem?
Yes
No
Rejected
Is it a balanced solution?
Yes
No
Rejected
Does create a new problem?
Rejected
Yes
No
Accepted
✗
✓

K Memory *Add-ons*

- Course of action should be a practical solution to the problem.
- Course of action should be a balanced solution.
- It should not create any further problems.
- The course of action should be taken according to the gravity of the problem and unnecessary harsh or strict action should be avoided as this becomes sometimes unparliamentary or unconstitutional which can only aggravate the problem rather than reducing it.
- The course of action should be feasible, practical and administrative in nature and must touch the aspects of common situations.

Mainly two types of questions are asked from this section, which are discussed as under

Type 1 Based on Two Courses of Action

In this type of questions, a statement is given followed by two courses of action numbered I and II. The candidate is required to understand the statement, analyse the problem or policy it mentions and then decide which of the courses of action logically follows.

Following examples will give a better understanding about this chapter

Directions (Example Nos. 1-3) In each of the questions below is given a statement followed by two courses of action numbered I and II. A course of an action is a step or an administrative decision to be taken for improvement, follow up or further action in regard to the problem, policy etc. On the basis of the information given in the statement you have to assume everything in the statement to be true and then decide which of the two given courses of action logically follow(s).

Give answer

(a) if only I follows
(b) if only II follows
(c) if either I or II follows
(d) if neither I nor II follows
(e) if both I and II follow

Ex **1** **Statement** A recent study shows that children below five die in the cities of the developing countries mainly from diarrhoea and parasitic intestinal worms.

Courses of Action I. Government of the developing countries should take adequate measures to improve the hygienic conditions in the cities.

II. Children below five years in the cities of the developing countries need to be kept under constant medication.

Sol. (*e*) If Government concentrates to improve the hygienic condition in the cities, it may definitely reduce the impact of problem and this course of action appears to be feasible also.

Hence, this course of action follows. A constant medication is another practical feasible step, which would help minimise the cases of death due to diarrhoea and intestinal worms. Therefore, course of action II also follows.

Ex **2** **Statement** The officer incharge of a company had a hunch that some money was missing from the safe.

Courses of Action I. He should get it recounted with the help of the staff and check it with the balance sheet.

II. He should inform the police.

Sol. (*a*) Here, a hunch about the money being lost does not provide any ground for the incident having actually taken place and hence, action to inform the police will not lessen the problem but is more likely to aggravate the situation. A prudent step is to recount the money and tally with the books of account.

Hence, course of action I is appropriate.

Ex **3** **Statement** Cell phone users have found that tariff plans are not as attractive as promoted by telecom companies and complained to regulatory authority about the same. **[SCRA 2013, UCO Bank (PO) 2009]**

Courses of Action I. The regulatory authority should direct telecom companies to be transparent on the tariff structure of all plans.

II. The Government should restrict the number of telecom companies operating in the country.

Sol. (*a*) Being 'not as attractive as promoted' is clear case of hiding things. Hence, transparency is the action to the problem and I follows. II goes against the spirit of free market and is not relevant to the problem either.

Practice Corner **4.1**

Build your Confidence...

Directions (Q. Nos. 1-27) In each of the questions below is given a statement followed by two courses of action. Course of action is a step for administrative decision to be taken for improvement, follow-up or further action in regard to the problem, policy etc. On the basis of the information given in the statement, you have to assume everything in the statement to be true, then decide which of the given suggested courses of action is/are logically worth pursuing.

Give answer

(a) if only I follows
(b) if only II follows
(c) if either I or II follows
(d) if neither I nor II follows
(e) if both I and II follow

1. Statement Two local passenger trains collided while running in opposite directions on the same track as the signalling system failed for a short period. [SBI (PO) 2009]

Courses of Action

I. The services of the motormen of the trains should immediately be terminated.
II. The Government should immediately constitute a task force to review the functioning of the signalling system.

2. Statement Almost 90% of the flights of one of the private airline company were cancelled for the fourth consecutive day as the pilots refused to join their duties in protest against sacking of two of their colleagues by the airline management. [SBI (PO) 2009]

Courses of Action

I. The management of the airline company should be ordered by the Government to immediately reinstate the sacked pilots to end the crisis.
II. The Government should immediately take steps to end the impasse between the management and the pilots to help the helpless passengers.

3. Statement A major part of the local market in the city was gutted due to a short circuit causing extensive damage to goods and property. [SBI (PO) 2009]

Courses of Action

I. The Government should issue strict guidelines for all establishments regarding installation and maintenance of electrical fittings.
II. The Government should relocate all the markets to the outskirts of the city.

4. Statement Air export volume has increased substantially over the past decade causing backlogs and difficulties for air cargo agents because of increased demand for space and service.

Courses of Action

I. Airlines and air cargo agents should jointly work out a solution to combat the problem.
II. The reasons for the increase in the volume of air export should be found out.

5. Statement The world conference of 'Education for All' took place in 1990. Members who attended conference endorsed the frame-work of action for meeting the basic learning needs of all children.

Courses of Action

I. India should suitably implement the action points of this conference.
II. India should also immediately organise this type of conference.

6. Statement Drinking water supply to many parts of the town has been disrupted due to loss of water because of leakage in pipes supplying water. [Andhra Bank (PO) 2009]

Courses of Action

I. The Government should order an enquiry into the matter.
II. The civic body should set up a fact finding team to assess the damage and take effective steps.

7. Statement A number of school children in the local schools have fallen ill after the consumption of their subsidised tiffin provided by the school authority. [SCRA 2013, PNB (PO) 2011]

Courses of Action

I. The tiffin facility of all schools should be discontinued with immediate effect.
II. The Government should implement a system to certify the quality of tiffin provided by the school.

8. **Statement** Heavy rains hit the state during October, just before the State Assembly elections and caused heavy damage to standing crops in most parts of the state. **[SCRA 2013, PNB (PO) 2011]**

Courses of Action

I. Elections should be postponed to give candidates the opportunity to campaign.

II. The Government should announce a relief package for those who are affected.

9. **Statement** An increasing number of graduates produced by Indian universities are unemployable. **[PNB (PO) 2011]**

Courses of Action

I. Colleges and institutes of higher learning should be given greater autonomy to decide the course content.

II. World class foreign universities should be encouraged to set up campuses in India.

10. **Statement** Although the Indian economy is still heavily dependent on agriculture, its share in global agricultural trade is less than the share of agricultural exports to total exports.

Courses of Action

I. Efforts should be made to increase our agricultural production.

II. The exports of non-agricultural commodities should be reduced.

11. **Statement** Huge amount of resources are required to develop tourist places in a country like India, which is endowed with vast coastlines, rivers, forests, temples etc.

Courses of Action

I. More tourist resorts along the coastlines only should be started.

II. The tourist potential of India should be exploited.

12. **Statement** The Government has decided not to provide financial support to voluntary organisations from next five years plan and has communicated that all such organisations should raise funds to meet their financial needs.

Courses of Action

I. Voluntary organisations should collaborate with foreign agencies.

II. They should explore other sources of financial support.

13. **Statement** The experts group on technical education has stressed that computer education should be provided to children from primary school itself. It should be implemented in urban and rural schools, simultaneously.

Courses of Action

I. Government should issue instructions to all schools for computer education.

II. Atleast one teacher of each school should be trained in computer operations for teaching children.

14. **Statement** The dolphin population in India has been decreasing sharply over the past few years. **[UCO Bank (PO) 2009]**

Courses of Action

I. Dolphins should be declared an endangered species and bred in aquariums or protected areas.

II. Locals should be enlisted to protect dolphins.

15. **Statement** The chairman stressed the need for making education system more flexible and regretted that the curriculum has not been revised in keeping with the pace of the changes taking place.

Courses of Action

I. Curriculum should be reviewed and revised periodically.

II. System of education should be made more flexible.

16. **Statement** Reports of steep and continued decline in the inflows into the Gobindsagar reservoir of the Bhakra Dam, coupled with a depleted stock of steam coal with the thermal power plants in the North, may lead to a serious power crisis in the region.

Courses of Action

I. The supply of steam coal to the thermal power plants needs to be immediately stepped up by the Government.

II. The Government should set up hydraulic power plants on other rivers in the region.

17. **Statement** Financial stringency prevented the Government of state 'X' from paying salaries to its employees, since April this year.

Courses of Action

I. The Government of state 'X' should immediately curtail the staff strength atleast by 30%.

II. The Government of state 'X' should reduce wasteful expenditure and arrange to pay the salaries of its employees.

18. Statement The police department has come under a cloud with recent revelations that atleast two senior police officers are suspected to have been involved in the illegal sale of a large quantity of weapons from the state police armoury.

Courses of Action

I. A thorough investigation should be ordered by the State Government to find out all those who are involved into the illegal sale of arms.

II. State police armoury should be kept under Central Government control.

19. Statement A large part of the locality was flooded as the main pipe supplying drinking water bursted while the workers of a utility company were laying cables in the area. [Canara Bank (PO) 2010]

Courses of Action

I. The civic authority should immediately arrange to repair the damage and stop loss of water.

II. The civic authority should seek an explanation and compensation from the utility company for the damage caused by them.

20. Statement Millions of pilgrims are expected to take a dip in the Ganga at the holy place during the next fortnight. [Canara Bank (PO) 2010]

Courses of Action

I. The Government should restrict the number of pilgrims who can take dip each day during the fortnight.

II. The Government should deploy an adequate number of security personnel to maintain law and order during the next fortnight at the holy place.

21. Statement The rate of inflation has reached its highest in last twenty years and there is no sign of it softening in the coming months. [Canara Bank (PO) 2010]

Courses of Action

I. The Government should initiate steps like reducing Government taxes on essential commodities with immediate effect.

II. Farmers should be asked by the Government to sell their products at lower prices.

22. Statement The State Government has decided to declare 'Kala Azar' as a notifiable disease under the Epidemic Act. Under the Epidemic Act, 1897, family members or neighbours of the patient are liable to be punished in case they did not inform the State Authorities.

Courses of Action

I. Efforts should be made to efficiently implement the Act.

II. The cases of punishment should be propagated through mass media, so that more people become aware of the stern action.

23. Statement Every year, at the beginning or at the end of the monsoon, we have some cases of conjuctivitis, but this year, it seems to be a major epidemic, witnessed after nearly four years.

Courses of Action

I. Precautionary measures should be taken after every four years to check the epidemic.

II. People should be advised to drink boiled water during the monsoon season.

24. Statement The committee has criticised the institute for its failure to implement a dozen of regular programmes despite an increase in the staff strength and not drawing up a firm action plan for studies and researches.

Courses of Action

I. The broad objectives of the institute should be redefined to implement a practical action plan.

II. The institute should give a report on reasons for not having implemented the planned programmes.

25. Statement It is reported that vitamins and minerals in vegetables and fruits are beneficial for human body. Medicines do not have the same effect on human body.

Courses of Action

I. People should be encouraged to take fresh fruits and vegetables to meet human body's requirement of vitamins and minerals.

II. The sale of medicines of vitamins and minerals should be banned.

26. Statement Many pilgrims died in a stampede while boarding a private ferry to the holy place on the first day of the ten day long festival. [IDBI Bank (PO) 2010]

Courses of Action

I. The Government should immediately cancel the licences of all the private ferry operators with immediate effect.

II. The Government should deploy an adequate number of its personnel to guide pilgrims on their journey to the holy place.

27. Statement Some students of the local college were caught travelling in the train without purchasing valid tickets. [Syndicate Bank (PO) 2010]

Courses of Action

I. The parents of these students should be informed about the incident and requested to counsel their wards.

II. These students should be put behind bars for travelling without bonafide credentials.

Directions (Q. Nos. 28-32) In each of the questions below is given a statement followed by two courses of action numbered I and II. A course of action is a step or administrative decision to be taken for improvement, follow-up or further action in regard to the problem, policy, etc. On the basis of the information given in the statement, you have to assume everything in the statement to be true, then decide which of the suggested courses of action logically follow (s) for pursuing.

Give answer

(a) if only I follows
(b) if only II follows
(c) if either I or II follows
(d) if neither I nor II follows
(e) if both I and II follow

28. Statement Cases of road accidents are increasing constantly, particularly in the urban areas. **[NABARD 2008]**

Courses of Action

I. Transport Authorities in the urban areas should impose stringent norms for maintenance of vehicles.
II. Traffic police should severely punish those found to be violating traffic rules.

29. Statement Despite good economic progress of the country, significant number of under-nourished children has been observed in the rural parts of the country. **[NABARD 2008]**

Courses of Action

I. Government should increase Wealth Tax/ Income Tax and use that money for upliftment of the deprived class.
II. Government should introduce schemes like free meals in primary schools and make primary education compulsory.

30. Statement There has been a spurt of robbery and house breaking incidents in one locality during the past fortnight. **[OBC (PO) 2008]**

Courses of Action

I. The local police station personnel should start patrolling the locality at regular intervals.
II. The residents in the locality should be asked by the police authority not to leave their houses during the night.

31. Statement The local college principal has ordered that all the students must strictly adhere to the dress code stipulated by college authority in the admission brochure. **[BOI (PO) 2008]**

Courses of Action

I. Those students who are found to violate the dress code should be terminated from the college.
II. Those students who are found to violate the dress code for the first time should be reprimanded and be warned against further violation.

32. Statement The railway have decided to repair the main tracks within the city on the following Sunday and have decided to suspend operations for the whole day. **[BOI (PO) 2008]**

Courses of Action

I. The railway authority should issue public notification well in advance to case inconvenience to the passengers.
II. All the long distance trains entering the city during the repair hours should be terminated outside the city limit.

Directions (Q. Nos. 33-34) Each question contains one statement and two Courses of action I and II. Assuming the statements to be true, decide which of the two courses of action most logically follows. **[CLAT 2013]**

Give answer

(a) if only I follows
(b) if only II follows
(c) if either I or II follows
(d) if neither I nor II follows

33. Statement Despite child labour laws, children can be seen working in hotels, shops, houses very frequently.

Courses of Action

I. The Government should not make such laws which cannot be enforced.
II. A proper education system for the primary level particularly for lower caste community may eradicate this problem.

34. Statement School dropout rate is very high in the rural areas as children support their parents in income earning activities.

Courses of Action

I. Public awareness programme on primary education should be expanded immediately to educate parents.
II. Compensation should be given to rural families.

Response & Interpretations **(4.1)**

1. (*b*) Motormen should not be made the scapegoat for the failure of the signalling system.

2. (*b*) If the Government goes for I, it would impinge on the autonomy of the private sector.

3. (*a*) I follows as a measure of caution. But II wont solve the problem and poor electrical fittings would wreak havoc where ever the market be.

4. (*a*) The problem faced by the airlines and cargo agents is the non-availability of cargo space. Therefore, right course of action is to combat the problem.

5. (*a*) Implementation of such action plans as framed by the conference is a right course of action as it will give an immediate and effective impact on the standard of education for the children.

6. (*b*) The first course of action does not match the scale of the problem. The problem is not so big as to merit a Government enquiry. It is enough that the civic body takes action and hence, II follows.

7. (*b*) I is invalid because of being an extreme action. II is a proper corrective measure.

8. (*e*) I follows because holding the elections at this juncture would render the exercise meaningless. II follows for 'heavy damage'.

9. (*d*) None focuses on the real reason of unemployability.

10. (*a*) Only by increasing our agricultural production, we can have a better position in international agricultural trade. Reduction in non-agricultural commodities will further worsen our position. So, only I is the right course of action.

11. (*b*) As in the given statement, India is already endowed with tourist spots. Therefore, the existing potential should be exploited.

12. (*b*) Obviously, if Government has decided to stop financial support to voluntary organisations, these organisations should find other sources of financial support. Hence, II is valid.

13. (*e*) Both are the right courses of action for effective implementation of computer education at primary level in urban and rural schools.

14. (*e*) Both I and II will help increase the population of dolphins.

15. (*e*) Statement speaks of inadequacies of the education system and emphasises the need for flexibility and revision. Hence, both the actions are right courses of action to update the curriculum.

16. (*a*) Statement points out the crisis faced by the power plants and one of the crisis is depletion of stock of steam coal with the thermal power plants in the North. Therefore, it is the right course of action to supply the steam coal to the thermal power plants. Secondly, since the water inflows into the Gobindsagar has declined, setting up of another hydraulic power plant will be futile.

17. (*b*) Curtailing wasteful expenditure is the right step towards making provisions for money to be distributed against pending salaries. Curtailing staff-strength is not the right solution. Hence, course of action II is the right course of action.

18. (*a*) Keeping the State police armoury under the supervision of Central Government control is not the right course of action to bring the guilty to the book. However, an investigation may help to reveal those involved into the illegal acts. Hence, only action I is the right course of action.

19. (*e*) I is advisable in the short term while II in the long term.

20. (*b*) I is a resitive issue and not feasible. II will help take care of the rush.

21. (*d*) Going for I and II will create other problems.

22. (*e*) It is given in the statement that 'Kala Azar' has been declared as notifiable disease. Since, it is a good effort by the Government, hence effort should be made to implement the Act. Moreover, a deterrent in the form of punishment will ensure effective implementation of the Act.

23. (*b*) It is not necessary that such an epidemic occurs after four years. Hence, Course of action I is not the right course of action. Secondly, prevention during monsoon season is the right step to face the problem of conjuctivitis. So, Course of action II is the right course of action.

24. (*e*) The efficiency of the institute can be boosted up by redefining the institute's objectives laid down for this purpose and by way of finding the reasons for the failure. Hence, both the actions are right courses.

25. (*a*) According to the statement, the suitable Course of action is I. People should be encouraged to take fresh fruits and vegetables instead of medicines to meet human body's requirement of vitamins and minerals.

26. (*b*) I is an insensible action. But II will be helpful in preventing such accidents.

27. (*a*) We should remember that the culprits are mere students. Going for II instead of I would make sense only if it is a repeated act.

28. (*b*) Poor maintenance of vehicles may lead to pollution, but is seldom a cause of accident. Hence, I does not follow. But II follows as violation of traffic rules is the chief cause of accidents.

29. (*e*) Both I and II follow, because providing nourishment to children needs money. Also, making primary education compulsory is a step forward to tackle the problem of under-nourishment.

30. (*a*) I follows, because the patrolling would create a fear among the robbers and act as a deterrent. II does not follow, because it is not feasible.

31. (*b*) Going for I is an extreme action and should be resorted to only when the students fail to behave themselves after repeated warnings like the one given in II.

32. (*e*) Both I and II follow. I follows because such an advance notice makes the passengers mentally prepared; II follows as an inevitable course of action.

33. (*b*) Only Course of action II follows as primary education may eradicate the problem.

34. (*a*) Only Course of action I can follow as public awarness programme should be expanded immediately.

Type 2 Based on Three Courses of Action

In this type of questions, a statement is given followed by three courses of action numbered I, II and III. The candidate is required to assess the given situation and take the administrative decision with regard to the given problem and provide the requisite course of action to be taken to lesson the extremities of the problem.

Directions (Example Nos. 4-5) A statement is given followed by three courses of action. A course of action is taken for improvement, follow-up etc. Read the statement carefully and pick the correct answer choice.

Ex **4** **Statement** The police has failed to protect the elderly citizens of the society. Only last week three old persons were killed at three different places.

Courses of Action I. The police should be asked to take special care of women and children.

II. The Government should bring a legislation against the killing of elderly people.

III. Criminals who are accused of killing elderly people should be prosecuted by the state.

(a) Only I follows (b) Only II follows (c) Only III follows (d) None follows

Sol. (*d*) I is invalid as the given statement talks about elderly people and not women and children. II and III are proper courses of action, yet they do not follow because such provisions are already there. Infact killing elderly people is a punishable offence under section 300 and 302 of IPC while murderers as a rule are projecuted by the state.

Therefore, II and III are not new suggestions. Infact, they are already in practice. Hence, I, II and III all are invalid.

Ex **5** **Statement** Many political activists have decided to stage demonstrations and block traffic movement in the city during peak hours to protest against the steep rise in prices of essential commodities.

[Canara Bank (PO) 2010]

Courses of Action I. The Government should immediately ban all forms of agitations in the country.

II. The police authority of the city should deploy additional forces all over the city to help traffic movement in the city.

III. The state administration should carry out preventive arrests of the known criminals staying in the city.

(a) Only I (b) Only II (c) Only III (d) Both I and II (e) None of these

Sol. (*b*) I is not feasible in a democracy. III does not follow because the problem is not concerned with 'criminals'. II is the only course of action the authorities can resort to.

Practice Corner **4.2**

Build your Confidence...

Directions (Q. Nos. 1-24) In each of the questions below is given a statement followed by three courses of action numbered I, II and III. A course of action is a step or administrative decision to be taken for improvement, follow-up or further action in regard to the problem, policy, etc. On the basis of information given in the statement, you have to assume everything in the statement to be true and then decide which of the three given suggested courses of action logically follows worth pursuing. Then, decide which of the alternatives (a), (b), (c), (d) or (e) is correct.

1. **Statement** The army has been alerted in the district following floods triggered by incessant rains.

Courses of Action

I. Relief to flood affected people should be arranged.

II. Supply of flood articles should be arranged.

III. Adequate medical facilities should be arranged.

(a) Only I follows
(b) Only II follows
(c) Both I and III follow
(d) All follow

2. **Statement** Faced with a serious resource crunch and a depressing overall economic scenario, the state 'X' is unlikely to achieve the targeted per cent compound annual growth rate during the 10th plan.

Courses of Action

I. The target growth should be reduced for the next plan.

II. The reasons for the failures should be studied.

III. The state 'X's performance should be compared with that of other states.

(a) Only I follows
(b) Both I and III follow
(c) Both II and III follow
(d) None follows

3. **Statement** Over 27000 bonded labourers identified and freed are still awaiting rehabilitation.

Courses of Action

I. More cases of bonded labourers should be identified.

II. Till the proper rehabilitation facilities are available, the bonded labourers should not be freed.

III. The impediments in the way of speedy and proper rehabilitation of bonded labourers should be removed.

(a) Only I follows
(b) Only II follows
(c) Only III follows
(d) Both II and III follow

4. **Statement** Higher disposal costs encourage those who produce waste to look for cheaper ways to get rid of it.

Courses of Action

I. The disposal costs should be made higher.

II. The disposal costs should be brought down.

III. A committee should be set up to study the details in this respect.

(a) Only I follows
(b) Only II follows
(c) Either I or II follows
(d) Both II and III follow

5. **Statement** If the faculty members also join the strike, there is going to be a serious problem.

Courses of Action

I. The faculty members should be persuaded not to go on strike.

II. Those faculty members who join the strike should be suspended.

III. The management should not worry about such small things.

(a) Only I follows
(b) Only II follows
(c) Both II and III follow
(d) None follows

6. **Statement** According to the officials, paucity of funds with the organisation has led to the pathetic condition of this brilliant architectural structure.

Courses of Action

I. A new architectural structure for the building should be designed.

II. The reasons for the poor condition of the structure should be found out.

III. Grant should be given to improve the condition of the structure.

(a) Only I follows
(b) Only II follows
(c) Only III follows
(d) Both II and III follow

7. Statement In the Teacher's Day function, Shri Sharma, a State Awardee and a retired Principal, had questioned the celebration of Teacher's Day in today's materialistic world.

Courses of Action

I. The expenditure of Teacher's Day celebration should be reduced.

II. More funds should be allocated for the celebration of Teacher's Day.

III. The role and responsibilities of teachers should be seen in today's perspective.

(a) All follow
(b) None follows
(c) Either I or II follows
(d) Only III follows

8. Statement The members belonging to two local clubs occasionally fight with each other on the main road and block traffic movement. **[SBI (PO) 2009]**

Courses of Action

I. The local police station should immediately deploy police personnel round the clock on the main road.

II. Those involved in fighting should be identified and put behind bars.

III. The local administration should disband the management of the two clubs with immediate effect.

(a) Both I and II follow
(b) Both II and III follow
(c) Both I and III follow
(d) All follow

9. Statement Many students of the local school fell ill for the fourth time in a row in the last six months after consuming food prepared by the school canteen. **[SBI (PO) 2009]**

Courses of Action

I. The school management should immediately terminate the contract of the canteen and ask for compensation.

II. The school management should advise all the students not a eat food articles from the canteen.

III. The owner of the canteen should immediately be arrested for negligence.

(a) None follows
(b) Only II follows
(c) Only III follows
(d) Both I and II follow
(e) Both II and III follow

10. Statement A blast was triggered off injuring many, when the night shift workers at an ordinance factory were handling 'fox signalling explosive'.

Courses of Action

I. The factory management should train its staff as regards to the safety aspects of handling such explosive materials.

II. The service of the supervisor incharge of the night shift should be terminated immediately.

III. The factory should immediately stop carrying out such exercises at night.

(a) None follows
(b) All follow
(c) Only I follows
(d) Both I and II follow
(e) None of the above

11. Statement A major railway accident involving a mail train was averted due to the presence of mind of one signal man at a wayside cabin.

Courses of Action

I. The railway track for atleast 50 km should be cleared off any traffic ahead of all the mail trains.

II. The railway signalling systems should immediately be made automatic.

III. The signal man should be rewarded so as to encourage others.

(a) All follow
(b) None follows
(c) Both I and II follow
(d) Both II and III follow
(e) None of the above

12. Statement Cholera broke out recently in most of the cities killing a large number of people and affecting hundreds of households.

Courses of Action

I. An enquiry should be initiated to identify the cause of the catastrophe.

II. The civic administration should make the general public aware of, through mass media, the preventive measures to be adopted in such a situation.

III. The para-military forces should be called into help the civic administration.

(a) None follows
(b) Only II follows
(c) Both I and II follow
(d) All follow

13. Statement A large number of tribal inhabitants are found to have been suffering from various diseases due to exposure to radioactive waste near the uranium mine.

Courses of Action

I. The Government should immediately close down the mine.

II. The Government should immediately take steps to save local people from exposure to radioactive waste.

III. The tribals should be rehabilitated at a safer place.

(a) Both II and III follow
(b) Both I and II follow
(c) Both I and III follow
(d) Only III follows

14. Statement Many school buses have fitted CNG kit without observing the safety guidelines properly. This results into some instances of these buses catching fire due to short circuit and endangering the lives of the school children. **[UCO Bank (PO) 2008]**

Courses of Action

I. The regional transport authority should immediately carry out checks of all the school buses fitted with CNG kit.

II. The management of all the schools should stop hiring buses fitted with CNG kit.

III. The Government should issue a notification banning school buses for the use of CNG kit.

(a) Only I follows
(b) Only II follows
(c) Only III follows
(d) Both I and III follow
(e) None of the above

15. Statement Every year thousands of eligible students do not get admission in colleges, both in urban and rural areas, after passing their school leaving certificate examination.

Courses of Action

I. More colleges should be set up in both urban and rural areas.

II. The number of schools in both urban and rural areas should be reduced.

III. More schools should offer vocational courses to equip students for taking up their vocation after completing their school education.

(a) Only I follows
(b) Both II and III follow
(c) All follow
(d) Both I and III follow

16. Statement Any further increase in pollution level in the city, by way of industrial effluent and automobile exhaustion, would pose a severe threat to the inhabitants.

Courses of Action

I. All the factories in the city should be immediately closed down.

II. The automobiles should not be allowed to ply on the road for more than four hours a day.

III. The Government should restrict the issue of fresh licenses to factories and automobiles.

(a) Only III follows
(b) All follow
(c) Only II follows
(d) None follows

17. Statement India's pre-eminent position in the world black pepper production and trade is in danger as some of the countries, which recently started production of the 'king of the spices' crop from Indian root stocks, are farming better by adopting modern cultivation practices.

Courses of Action

I. India should immediately stop supplying root stocks of black pepper to other countries.

II. India should adopt modern technology for cultivating black pepper to compete in the international market.

III. India should reduce the price of its black pepper to remain competitive in the world market.

(a) All follow
(b) Only II follows
(c) Only I follows
(d) Only III follows

18. Statement A large private bank has decided to retrench one-third of its employees in view of the huge losses incurred by it during the past three quarters. **[Canara Bank (PO) 2010]**

Courses of Action

I. The Government should issue a notification to general public to immediately stop all transactions with the bank.

II. The Government should direct the bank to refrain from retrenching its employees.

III. The Government should ask the central bank of the country to initiate an enquiry into the bank's activities and submit its report.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only III follows
(e) Both I and II follow

19. Statement Incessant rain for the past several days has posed the problem of overflowing and flood as the river bed is full of silt and mud.

Courses of Action

I. The people residing near the rivers should be shifted to a safer place.

II. The people should be made aware about the immediate danger over radio/television.

III. The silt and mud from the river bed should be cleared immediately after the receding of the water level.

(a) Both I and II follow
(b) Both II and III follow
(c) Both I and III follow
(d) All follow

20. Statement In the city, over 75% of the people are living in slums and sub standard houses, which is a reflection on the housing and urban development policies of the Government.

Courses of Action

I. There should be a separate department looking after housing and urban development.

II. The policies in regard to urban housing should be reviewed.

III. The policies regarding rural housing should also be reviewed, so that such problems could be avoided in rural areas.

(a) Only I follows
(b) Only II follows
(c) Both II and III follow
(d) Either II or III follows

21. Statement Lack of coordination between the university, its colleges and various authorities has resulted in students ousted from one college seeking migration to another.

Courses of Action

I. If a student is ousted from a college, the information should be sent to all the other colleges of university.

II. The admissions to all the colleges of the universities should be handled by the university directly.

III. A separate section should be made for taking strict action against students indulging in anti-social activities.

(a) Only I follows
(b) Only II follows
(c) Only III follows
(d) Both I and III follow

22. Statement The institute has fixed for the investors a validity period of one year for transfer forms for some of its listed schemes.

Courses of Action

I. The institute should consult investors before fixing the duration of validity period.

II. The investors should be duly informed about the validity period.

III. List of schemes covered under this validity period should be communicated.

(a) All follow
(b) Both I and II follow
(c) Both I and III follow
(d) Both II and III follow

23. Statement Without the active cooperation between the proprietor and the employees of the mill, it cannot remain a profitable concern for long.

Courses of Action

I. The mill should be closed down.

II. The workers should be asked to cooperate with the owners.

III. The owner should be asked to cooperate with the employees.

(a) Both I and II follow
(b) None follows
(c) All follow
(d) Both II and III follow

24. Statement Some strains of mosquito have become resistant to chloroquine, the widely used medicine for malaria patients.

Courses of Action

I. Selling of chloroquine should be stopped.

II. Researchers should develop a new medicine for patients affected by such mosquitos.

III. All the patients suffering from malaria should be checked for identification of causal mosquito.

(a) None follows
(b) Both I and II follow
(c) Both II and III follow
(d) All follow

Response & Interpretations **(4.2)**

1. (*d*) All the courses of action are worth pursuing for the problem as defined in the statement, because flood affected persons need all sort of relief *i.e.*, food, medical facilities etc.
2. (*c*) Courses of action II and III are worth pursuing the problem as defined in the statement. Reasons for failure should be studied and performance of the affected state should be compared with that of other states.
3. (*c*) Only Course of action III provides a feasible and effective course to combat the problem, that impediments in the way of speedy and proper rehabilitation should be removed. Courses of action I and II are not effective courses.
4. (*d*) Courses of action II and III are feasible and effective to combat the problem.
5. (*a*) The best way to prevent faculty members to go on strike is to persuade them. Hence, Course of action I shows the right course of action.
6. (*c*) Condition of the architectural structure can be improved by way of adequate finance. Hence, Course of action III, that grant should be given to improve the condition of the structure, is the right course of action.
7. (*d*) In the statement, celebration of Teacher's Day in today's materialistic world is in question which means that the role and responsibilities of teachers should be seen in today's perspective. Hence, Course of action III is the right course of action.
8. (*c*) A proper course of action would be serving notices to these clubs to behave themselves. Even police personnel may be deployed but only during the sensitive hours.
9. (*a*) Courses of action I and III would be too harsh; II is absurd. Efforts should be made to supervise the quality of the food prepared by the canteen.
10. (*d*) Course of action I is the right course of action because training to the staff as to the safety aspects of handling explosive material will reduce the chances of such accidents in future. Course of action II is also a right course as it will work as deterrent to check any negligence, in such work.
11. (*a*) Courses of action I and II will directly improve the working condition of railways. Course of action III through, not directly related with improving railway traffic conditions but will encourage other signal men to be more watchful on their duties, which in turn, will reduce the probability of accidents.
12. (*d*) All the courses of action provide the feasible and effective steps for the problem discussed in the statement. Hence, all the courses of action are correct.
13. (*a*) Course of action I is not practical one, hence does not follow. Courses of action II and III are right courses and deal with the problem positively and effectively.
14. (*a*) Course of action I is the correct course of action. Courses of action II and III would create a bigger problem, like pollution.
15. (*d*) The statement describes the problem of admission in colleges faced by students. Both the courses of action I and III are the right steps towards providing solution of this problem.
16. (*a*) Only course of action III is the right course of action because other courses are not feasible.
17. (*b*) Only better quality can put India back in the competitive field of black pepper production. So, India should go for modern technology for cultivating black pepper to compete in the present international market.
18. (*d*) Course of action I would be an extreme step. Course of action II is not within the Government's preview. Course of action III is advisable when there is retrenchment on such a large scale.
19. (*d*) All actions given are right course of action following problem caused by the incessant rain for the past several days because each of the courses will provide relief to the victims.
20. (*b*) The statement speaks of the failure of housing and urban development policies of the Government, hence the policies in regard to urban housing should be reviewed.
21. (*a*) Only Course of action I is the right course of action which says that, if a student is ousted from a college, the information should be sent to all the other colleges of university. This is the way by which coordination between the university and the colleges can be maintained.
22. (*d*) The investors should be informed about the validity period, and the list of schemes covered under this validity period should be communicated so that the investors can benefit from this facility.
23. (*d*) It is given in the statement that cooperation between the proprietor and the employees is required for profit making reasons. It is therefore, required that both employees and proprietor should cooperate with each other.
24. (*c*) It is given in the statement that chloroquine has become ineffective for malaria patients. Therefore, researchers should develop a new medicine for the patients and all the patients suffering from malaria should be checked for identification of the causal mosquito.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-15) In each of the questions below is given a statement followed by two courses of action numbered I and II. A course of action is a step or an administrative decision to be taken for improvement, follow-up or further action in regard to the problem, policy etc. On the basis of the information given in the statement, you have to assume everything in the statement to be true, then decide which of the suggested courses of action logically follow(s) worth pursuing.

Give answer

(a) if only I follows
(b) if only II follows
(c) if either I or II follows
(d) if neither I nor II follows
(e) if both I and II follow

1. Statement While laying pipelines by one of the utility companies a huge fire broke out due to damage done to the pipeline.

Courses of Action

I. All the licences of the utility company should immediately be suspended pending enquiry into the incident.

II. People residing in the area should be advised to stay indoors to avoid burn injuries.

2. Statement There has been large number of internet hacking in the recent months creating panic among the internet users.

Courses of Action

I. The Government machinery should make an all out effort to check those who are responsible and put them behind bars.

II. The internet users should be advised to stay away from using internet till the culprits are caught.

3. Statement There is an unprecedented increase in the number of successful students in this year's school leaving certificate examination.

Courses of Action

I. The Government should make arrangements to increase number of seats of intermediate courses in the existing colleges.

II. The Government should take active steps to open new colleges to accommodate all these successful students.

4. Statement There has been a significant drop in the water level of all the lakes supplying water to the city.

Courses of Action

I. The water supply authority should impose a partial cut in supply to tackle the situation.

II. The Government should appeal to all the residents through mass media for minimal use of water.

5. Statement A very large number of students have failed in the final high school examinations due to wrong questions in one of the subjects.

Courses of Action

I. All the students who have failed in that subject should be allowed to take supplementary examination.

II. All those who are responsible for the error should be suspended and an enquiry should be initiated to find out the facts.

6. Statement The prices of foodgrains and vegetables have substantially increased due to prolonged strike call given by the truck owners association.

Courses of Action

I. The Government should immediately make alternative arrangements to ensure adequate supply of foodgrains and vegetables in the market.

II. The Government should take steps to cancel the licence of all the vehicles belonging to the association.

7. Statement There has been an unprecedented increase in the number of requests for berths in most of the long distance trains during the current holiday season.

Courses of Action

I. The railway authority should immediately increase the capacity in each of these trains by attaching additional coaches.

II. The people seeking accommodation should be advised to make their travel plan after the holiday.

8. Statement As many as ten coaches of a passenger train have derailed and blocked both pairs of the railway tracks.

Courses of Action

I. The railway authorities should immediately send men and equipment to the spot to clear the railway tracks.

II. All the trains running in both directions should be diverted to other routes.

9. Statement Two persons, while on their daily walks in the jogger's park were killed by unidentified miscreants early in the morning.

Courses of Action

I. The police authority should deploy police constables near the jogger's park to prevent such criminal acts in future.

II. The citizens of the locality should go for early morning walks in groups to avoid such acts. [BOI (PO) 2010]

10. Statement Many school children died in few accidents caused due to poor maintenance of school buses during the last few months.

Courses of Action

I. The Government should set up an expert group to inspect the condition of school buses to avoid such accidents.

II. The Government should suspend the licence of all the school buses till these buses are properly checked.

[BOI (PO) 2010]

11. Statement A huge tidal wave swept away many fishing boats and hutments of the fishermen living along the coastline.

Courses of Action

I. The fisherman should henceforth be restrained from constructing their huts along the coast line.

II. The local administration should send a team of officials to assess the extent of damage and suggest remedial measures. [Corporation Bank (PO) 2010]

12. Statement Prices of essential commodities have risen alarmingly due to prolonged transport strike.

Courses of Action

I. The transporter's association should be ordered by the Government to immediately withdraw strike call or else they will face severe consequences.

II. The Government should take help of military vehicles to restore supply of essential goods to the city.

13. Statement A large number of students studying in vernacular medium have not passed the Xth standard final examination.

Courses of Action

I. The Government should immediately review the situation and initiate measures to improve it.

II. All the teachers of these schools should be issued notices to improve performance of the students.

14. Statement A large number of invitees who attended the marriage function fell ill due to food poisoning and were rushed to various hospitals located in the area.

[Corporation Bank (PO) 2010]

Courses of Action

I. The Government should ban such marriage functions till further notice.

II. The local hospitals should be advised by the Government to provide best services to the affected people.

15. Statement Researchers are feeling agitated as libraries are not well equipped to provide the right information to the right users at the right time in the required format. Even the users are not aware about the various services available for them.

Courses of Action

I. All the information available in the libraries should be computerised to provide faster services to the users.

II. Library staff should be trained in computer operations.

Directions (Q. Nos. 16-17) In each question, a statement is followed by two courses of action numbered I and II. Assume everything in the statement to be true. Decide which of the two given suggested courses of action logically follows for pursuing.

16. Statement Majority of the students have failed in one paper in the first semester examination. **[CMAT 2013]**

Courses of Action

I. All those student who failed should be asked to drop out of the course.

II. The faculty teaching the paper should be asked to resign.

(a) If only I follows
(b) If only II follows
(c) If both I and II follow
(d) If neither I nor II follows

17. Statement The Central Bureau of Investigations (CBI) receives the complaint of an officer taking bribe to do the duty he is supposed to. **[RPSC 2013]**

Courses of Action

I. CBI should try to catch the officer red-handed and then take a strict action against him.

II. CBI should wait for some more complaints about the officer to be sure about the matter.

(a) if only I
(b) if only II
(c) both I and II follow
(d) if either I or II follows

Directions (Q. Nos. 18-22) In each question, a statement is followed by three courses of action numbered I, II and III. Assume everything in the statement to be true. Decide which of the three given suggested courses of action logically follows for pursuing.

18. Statement In one of the accidents on a railway level crossing, fifty people died when a bus carrying them collided with a running train.

Courses of Action

I. The train driver should immediately be suspended.

II. The driver of the bus should be tried in court for negligence on his part.

III. The railways authorities should be asked to man all its level crossings.

(a) None follows
(b) Only III follows
(c) Both I and II follow
(d) All follow

19. Statement There was a spurt in criminal activities in the city during the recent festival season.

Courses of Action

I. The police should immediately investigate into the causes of this increase.

II. In future the police should take adequate precautions to avoid recurrence of such a situation during festivals.

III. The known criminals should be arrested before any such reason.

(a) None follows
(b) Both II and III follow
(c) Both I and II follow
(d) All follow

20. Statement A mass mortality of shrimps in ponds on entire Andhra coast has recently been reported due to the presence of a virus.

Courses of Action

I. The water of the ponds affected should immediately be treated for identifying the nature of the virus.

II. The catching of shrimps from the ponds should temporarily be stopped.

III. The fishermen should be asked to watch for the onset of such phenomenon in nature.

(a) Only I follows
(b) All follow
(c) Both I and II follow
(d) Both II and III follow

21. Statement The weather bureau has through a recent bulletin forecast heavy rainfall during the next week which may cause water logging in several parts of the city.

Courses of Action

I. The bulletin should be given wide publicity through the mass media.

II. The civic authority should keep in readiness the pumping system for removal of water from these parts.

III. The people should be advised to stay indoors during period.

(a) None follows
(b) Only II follows
(c) Both I and II follow
(d) Both II and III follow

22. Statement The world will have to feed more than a billion people in the next century, of whom half will be in Asia and will eat rice as their staple food.

Courses of Action

I. More funds should immediately be allocated for rice research to help ensure adequate supplies.
II. The people in Asia should be encouraged to change their food habits.
III. The rice should be grown in countries outside Asia to meet the demand.

(a) Both I and II follow
(b) All follow
(c) Both II and III follow
(d) Both I and III follow

Directions (Q. Nos. 23-27) In each of the questions below a statement is given followed by three courses of action numbered I, II and III. A course of action is a step or an administrative decision to be taken for improvement, follow-up a further action in regard to the problem, policy etc. On the basis of the information given in the statement, you have to assume everything in the statement to be true, then decide which of the suggested courses of action logically follows worth pursuing. **[Dena Bank (PO) 2006]**

23. Statement Occurrences of natural calamities have now increased as compared to the situation five years ago.

Courses of Action

I. Government should always be ready with the action plan for disaster management.
II. Government should not permit development activities which are likely to cause harm to nature.
III. Government should appoint a committee of environmentalists and scientists to work out plans to handle various calamities.

(a) Both I and II follow
(b) Both I and III follow
(c) Both II and III follow
(d) All follow
(e) None of the above

24. Statement Despite increasing BPO jobs in our country, a large number of educated youth are unemployed.

Courses of Action

I. Government should give unemployment allowance to all unemployed youth.
II. Government should introduce various schemes in different areas that will generate employment opportunities.
III. Efforts should be made by the society and the Government to encourage the youth for vocational education.

(a) Both I and II follow
(b) Both II and III follow
(c) Both I and III follow
(d) Only II follows
(e) None of the above

25. Statement Cases of asthama sufferers have been rising, particularly in the big cities.

Courses of Action

I. Civic authorities should ensure adequate supply of medicines at normal rates.
II. Civic authorities need to control the air pollution caused due to emission from vehicles.
III. Act of tree-cutting without permission should be severely punished.

(a) Both I and II follow
(b) Both II and III follow
(c) Only III follows
(d) Only II follows
(e) None of the above

26. Statement Many students at school and degree level are not able to master the subjects even if they have passed out with high scores.

Courses of Action

I. Education boards should examine and revise the examination system to tap the real talent.
II. Examination system at all levels should be so designed as to discourage rote learning.
III. Difficulty level of the examination papers should be significantly increased.

(a) Only I follows
(b) Only II follows
(c) Both I and II follow
(d) Either I or II follows
(e) None of the above

27. Statement A large number of management institutes are mushrooming all over the country and not all the MBA's coming out are worth it.

Courses of Action

I. The Government should follow stringent norms for granting permission to the management institutes.
II. The students while taking admission should examine the market value for the degree, they are going to get.
III. The employers should make MBA as an essential qualification only for the positions where it is genuinely essential.

(a) Only I follows
(b) Only II follows
(c) Both I and II follow
(d) All follow
(e) None of these

Directions (Q. Nos. 28-32) In each of the questions below is given a statement followed by three courses of action numbered I, II and III. A course of action is a step or administrative decision to be taken for improvement, follow-up or further action in regard to the problem, policy etc. On the basis of the information given in the statement, you have to assume everything in the statement to be true, then decide which of the suggested course(s) of action is/are logically worth pursuing. **[SBI (PO) 2010]**

28. Statement Many people in the locality have fallen sick and admitted in the local hospital after consuming sweets served during a community meal.

Courses of Action

I. The police should immediately arrest all the people responsible for making the sweets.
II. The people admitted in the local hospital should immediately be shifted to bigger hospitals.
III. The local food and drug authority should investigate to find out the cause of the sickness and take necessary action.

(a) Both I and III follow
(b) Both II and III follow
(c) Only III follows
(d) All follow
(e) None follows

29. Statement Many management institutes in the city have enrolled a large number of students for management courses which are not recognised either by the local university or by the department of technical education.

Courses of Action

I. All these management institutes should immediately be derecognised by the university and the department of technical education.
II. All these management institutes should be asked to refund fees to all such students and enroll them only for recognised courses.
III. All such students should be advised to switch over to the recognised courses in other institutes.

(a) Only I follows
(b) Only II follows
(c) Only III follows
(d) Both II and III follow
(e) None of the above

30. Statement Large number of students have failed in the recently held SSC final examination due to their performance in the English language paper.

Courses of Action

I. The Government should immediately issue a circular to all the schools to appoint competent English language teachers.
II. The Government should immediately instruct all the schools to send their English language teachers for refresher courses to be conducted by the Government.
III. The Government should instruct the examining body to lower the difficulty level of the English language paper in the future examinations.

(a) None follows
(b) Only I follows
(c) Only III follows
(d) Both I and II follow
(e) All follow

31. Statement Every year during monsoon quite a few people get drowned and die while swimming in the sea on various beaches in the city.

Courses of Action

I. The civic administration should deploy atleast two life guards on each of the beaches during monsoon.
II. The civic administration should make arrangements to caution people whole swimming in the sea during monsoon.
III. The civic administration should put up prominent sign posts near the treacherous parts of the beaches advising people not to venture into the sea in the monsoon season.

(a) Both I and II follow
(b) Both II and III follow
(c) Both I and III follow
(d) All follow
(e) None of the above

32. Statement It is feared by the experts that there may be deficient rainfall in many parts of the country due to weak monsoon.

Courses of Action

I. The Government should immediately set up a committee of experts to study the amount of rainfall in various parts of the country.
II. The Government should make arrangements for providing relief supplies to the areas affected due to poor monsoon.
III. The farmers in the affected areas should be advised to switch over to crops requiring less water during the Kharif season.

(a) Only I follows (b) Only II follows (c) Only III follows (d) Both I and III follow
(e) None of these

Direction (Q. No. 33) Read the following information carefully and answer the given question. Despite repeated announcements that mobile phones were not allowed in the examination hall, three students were caught with their mobile phones. **[SBI (PO) 2013]**

A. Mobile phones now-a-days have a lot of features and it is easy to cheat with their help.
B. The invigilator must immediately confiscate the mobile phones and ask the students to leave the exam hall immediately.
C. Mobile phones are very expensive and leaving them in bags outside the exam hall is not safe.
D. There have been incidents where students who left the exam hall early stole the mobile phones kept in the bags of the students who were writting the exam.
E. The school authorities must ask the students to leave their phones in the custody of the invigilator before the exam in order to avoid thefts of mobile phones.
F. None of the other students were carrying their phones in the exam hall.

33. Which of the following among A, B, D and F can be an immediate course of action for the invigilator?

(a) Only B (b) Both A and D (c) Only A (d) Both D and F
(e) Only F

Response & Interpretations (Master Exercise)

1. (*b*) It is an accident and hence suspending licence of other utilities for this happening is not a right course of action. However, instructions should be given to the people to remain inside their houses.

2. (*a*) Only Course of action I is appropriate.

3. (*a*) Only Course of action I is appropriate.

4. (*e*) Both the courses of action are suitable for pursuing. The water supply authorities should impose a partial cut in supply to cope up with the prevailing situation. Also, the Government should appeal to the residents to use water economically.

5. (*e*) Both the courses of action are suitable for pursuing. A large number of students failed without committing any mistake. Therefore, they should be allowed to take supplementary examinations. Also, the responsible persons should be punished.

6. (*a*) The cause of increase in price of vegetables is the strike of trucks owners association. Therefore, the Government should ensure adequate supply of food grains and vegetables in the market. Course of action II is not appropriate.

7. (*a*) The best course of action would be to increase the capacity in each of the trains.

8. (*e*) Both the courses of action are appropriate.

9. (*e*) To avoid such mishappening, deploying police constables can be of help. Also, if people go in groups, then such incidents be avoid.

10. (*a*) The Government should set up an expert group to inspect the condition of school buses to avoid such accidents while II is impractical.

11. (*e*) Fishermen should, hence forth be restrained from constructing their huts along the coast line and also a team of officials should be sent to inspect the situation.

12. (*b*) Every establishment/institution has the legal right to protest by way of strike. However, Course of action II is the right course of action.

13. (*e*) Both courses of action are suitable for pursuing.

14. (*d*) Neither I nor II follows. Marriage functions could not be banned. Also, it is the duty of hospitals to provide best services and Government advice is not required.

15. (*e*) Computerisation will definitely help the users to take best available information available in the library. Also, training to the staff in computer operations can further add to betterment of services to the users. Hence, both are feasible and therefore right courses of action.

16. (*d*) The failure of majority of students hints at there being some lack on the part of the teaching faculty, which needs to be removed by constant efforts. So, none of the given courses of action follows.

17. (*a*) Only Course of action I follows as CBI should try to catch the officer red-handed and then take a strict action against him.

18. (*b*) Only III logically follows because such accidents should not be repeated. The railways authorities should be asked to man all its level crossings.

19. (*c*) I and II Courses of action logically follow because it is necessary for police to investigate into the causes and to avoid the recurrence of such situations, police should take adequate precautions.

20. (*b*) All courses of action logically follow. First of all, the water of ponds should be treated to identify the nature of the virus. Since the problem is being faced, so the catching of the shrimps from the ponds should be temporarily stopped. Also, the fisherman should be asked to watch for the onset of such phenomenon in nature.

21. (*d*) II and III Courses of action logically follow because for such time the pumping system for removal of water should be kept ready and the people should be advised to stay indoor during the period.

22. (*d*) I and III Courses of action logically follow. Since, in the next century the increased population will have to be fed more rice, hence, it is necessary to allocate more funds for rice research to help ensure adequate supplies. Besides, the rice should be grown in countries outside Asia to meet the demand.

23. (*d*) If the Government is not ready with the action plan for disaster management, then it is not possible to remove distress, hence Course of action I is appropriate. If the Government permits development activities which are likely to cause harm to nature, then natural calamities will increase, hence, II follows. If the Government appoints a committee of environmentalists and scientists and takes action accordingly, then it will be beneficial. Hence, Course of action III is appropriate.

24. (*b*) If the Government gives allowances to all the unemployed youths, then there will be great loss of money and they will not think for their future. Hence, I does not follow. II follows because various schemes in different areas will reduce the unemployment. If the Government and society introduce vocational education, it will also reduce unemployment. Hence, Course of action III follows.

25. (*a*) Civic authorities should ensure adequate supply of medicines at normal rates. By this we can control asthama. Hence, course of action I follows. Pollution is caused due to emission of fumes from vehicles. Due to this, problem in breathing is caused and asthama spreads. Hence, controlling pollution is necessary. Hence, II follows but Course of action III is not related to the statement.

26. (*c*) Course of action I follows because on examining the examination system, the defects of the education system can be removed. Course of action II also follows because the system of education should be so designed as to discourage rote learning. But Course of action III does not follow because it is of no use.

27. (*c*) It is necessary for the Government to follow stringent norms for granting permission to the management institutes. For the students too, it is necessary to examine the market value of the degree while taking admissions. But course of action III is not related to the statement. Hence, Courses of action I and II are appropriate.

28. (*c*) Only III follows. After finding the cause of the sickness, necessary action should be taken.

29. (*a*) The prime and effective course of action is derecognisation of such institutes by the university. Hence, the Course of action I is appropriate.

30. (*d*) To improve the standard in English language, the Courses of action I and II are necessary.

31. (*d*) In order to save the people from getting drowned, all the courses of action are necessary.

32. (*b*) Only, the Course of action II is appropriate because providing relief supplies to the affected areas is necessary.

33. (*a*) The immediate course of action for the invigilator is that he must immediately confiscate the mobile phones and ask the students to leave the exam hall immediately.

5

Passage and Conclusions

It is a combination of an information based passage followed by some conclusions based on that, which are to be checked according to a given set of directions.

This section deals with the questions in which unusual patterns of conclusions are inferred on the basis of a passage. Such conclusions are unusual as they are different from other type of conclusions which are based on the statements (as in case of syllogism).

Infact, other type of conclusions are definite *i.e.,* they are either definitely true or definitely false but here in the passage based conclusions, probability factor is also taken into consideration. It means apart from definite conclusion, (either definitely true or false), these passage based conclusions have scope for probability of truthfulness or falsity. This is the reason why these conclusions may be **definitely true** or **definitely false** or **probably true** or **probably false**.

Explanation of all these four types of conclusions will give a better idea about how to draw such inference

1. Definitely True

Such inferences are either directly given in the passage or are drawn on the basis of given information in the passage and logical analysis. They should prove to be 100% true.

See the following example

Passage 1

What to say about the greatness of the great Sachin Tendulkar. He does not need any introduction as more than 30 thousand international runs, 100 international centuries and 23 yr of long career inspite of so many serious injuries speak volume for him. The time when his colleagues like Rahul Dravid and Saurav Ganguli have called it a day, Sachin is still on his job.

Conclusions

I. Sachin has played international cricket for more than 20 yr.

II. Sachin has played with Rahul Dravid and Saurav Ganguli in the past.

Sol. (i) Conclusion I is definitely true from the sentence given in the passage '23 yr of long career'.

(ii) Conclusion II is definitely true because of the presence of word colleague. As Rahul Dravid and Saurav Ganguli have been the colleagues of Sachin, hence, he must have played with them in the past.

2. Definitely False

Such inferences either directly deny the facts given in the passage or by logical analysis, they prove to be 100% false.

Passage 2

A worrying feature of Indian urbanisation has been its tendency to increase pressure on the inner cities. The first results of the 2001 census suggest that the density of population in urban areas is within manageable limits, with most cities, including Greater Mumbai, being well below the 23000 per square m mark, set by Kolkata but within several of the older cities, the walled areas have high densities which exert pressure on the outdated amenities in these areas, a pressure that is accentuated by the poor maintenance of housing as well as other assets in the inner cities. The inner cities were designed for a pattern of urban life far removed from what exists today. The makers of narrow winding lanes could hardly have anticipated modern transportation. **[UCO Bank (PO) 2010]**

Conclusions

I. The density of population in the inner city of Greater Mumbai is the highest in India.

II. At the time of planning the cities in the past, the use of bigger roads was envisaged by the planners.

Sol. (i) It is given in the passage that as per 2001 census, density of population in the inner city of Greater Mumbai is within manageable limits. Hence, conclusion is definitely false as it contradicts the information given in the passage.

(ii) It is clear from the last line of the passage.

3. Probably True

The word probable means that there are chances of occuring or not occuring of an event. This option is available for testing a conclusion when it is not definitely true. In other words, it does not follow the statement directly. It is to be noted here that a conclusion is not definitely true because there exists little chance for its being wrong as well. Therefore, there is every possibility of its swing towards truthfulness.

Passage 3

After the victory in the last two test series, Mahendra Singh Dhoni has become the most successful Indian captain in terms of test wins surpassing the former best Saurav Ganguli. No doubts, India will record another victory in the upcoming test series against Australia, if Dhoni gets a chance to captain the Indian side again against the Kangaroos. Further, Dhoni needs only two runs to complete his 4000 test runs, cricket lovers hope that his dream also be fulfilled against Australia.

Conclusions

I. Dhoni will definitely be the Indian captain against Australia in the upcoming test series.

II. Dhoni will complete 4000 test runs in his next test match.

Sol. (i) Conclusion I is probability true as Dhoni's past performances as an Indian captain make a fair chance for his being captain in the upcoming test series against Australia. However, the captain has not been declared so for, hence, it cannot be definitely said that he will certainly get the captaincy. No doubts, his past record is fabulous but some other factors may play a vital role behind his not being the captain. *e.g.*, Because of some personal reasons, Dhoni may keep himself out of the captaincy but inspite of all these facts, the conclusion derived has greater swing towards probability of being true.

(ii) Conclusion II will be probably true as Dhoni has to score only 2 runs to complete his 4000 test runs. As 2 runs is a very little score to complete 4000 test runs, hence, the chances are bright. Therefore, conclusion derived has greater swing towards probability of being true.

4. Probably False

This is similar to the one applied in the case of probably true. Whenever, the conclusion is not definitely false it is so because there exists little chance of its being true. In such cases, the conclusion is said to be probably false. Here, the swing seems to be towards falsity and the conclusion is termed probably false.

Passage 4

"Now the question of the freedom of the press becomes an important question in view of the fact that the press vast potentialities for both good and evil. The press is as much a passion rouser as it is a peacemaker. In the days of discords and dissensions, it bars the door to reconciliation or atleast the quarrel is prolonged beyond its limits. Knowledge is not always good and sometimes ignorance is bliss.

Conclusion Knowledge is good.

Sol. Though the conclusion contradicts the statement of the passage that knowledge is not always good, yet the conclusion cannot be taken for as definitely false. All the same, the use of word 'always' in the statement reduces the chance of the conclusion being definitely true and these is an apparent swing towards falsity. Hence, the given conclusion is probably false.

5. Data Inadequate

Data inadequate is one of the answer options given in the question. It means the candidate doesn't have enough information to arrive at a conclusion.

Passage 5

There is more bad news on food front. It now appears certain that there will be a shortfall of about 9 million tonnes in the food production in the current Kharif season, which in turn means 5 million tonnes less than the production achieved in the last Kharif season. However, rice procurement may only be partially affected, since Paschim Bangal and Andhra Pradesh have had sufficient rainfall while Punjab, the major contributor to the central pool, is less dependent on rainfall. Still the overall availability of rice may go down by more than 4 million tonne. There may be worse news ahead. **[IDBI Bank (PO) 2008]**

Conclusion Last year, there was deficit production of rice by 5 million tonnes.

Sol. It is only given in the passage that this year, there is 5 million tonnes less production than the last season.

K Memory *Add-ons*

There are certain words which helps us in finding Whether the given statement is definitely true, probably true, definitely false or probably false; words such as all, some, none, never, must be, might be, will be , would be, sometimes, always, inspite of, despite of, because of, nevertheless, usually, similarly, exactly, probably, etc.

e.g.,

- The rise of crude oil prices **usually** results in rise of petrol prices in India.
- The rise of crude oil prices **always** results in rise of petrol prices in India.

From Statement 1 We infer that when the crude oil prices are increased, then petrol prices in India may remain same or may increase. This can be inferred by the key word '**usually**' that means not always.

From Statement 2 We infer that when crude oil prices are increased, then petrol prices also increase in India.
This can be inferred by the key word '**always**'.

Directions (Example Nos. 1-5) Below is given a passage followed by several possible inferences which can be drawn from the facts stated in the passage. You have to examine each inference separately in the context of the passage and decide upon its degree of truth or falsity. **[SBI (PO) 2009]**

Give answer

(a) if the inference is definitely true, *i.e.,* it properly follows from the facts given
(b) if the inference is probably true though not definitely true in the light of the facts given
(c) if the data is inadequate , *i.e.,* from the facts given you cannot say whether the inference is likely to be true or false
(d) if the inference is definitely false, *i.e.,* it cannot possibly be drawn from the facts given or it contradicts the given facts

In an era of globalisation, we need to find appropriate tools to confront the challenges facing agriculture. Commodity future markets can play a major role in addressing some of these challenges. In order to improve agricultural productivity, we need to encourage private investment including that from individual farmers and reasonable returns for agriculture produce is a prerequisite for this.

The price appreciation in agriculture commodities has failed to match the increase in price of inputs of the price rise of other commodities, indicating deteriorating terms of trade for agriculture. Our spot markets are fragmented and being dominated by a large chain of intermediaries can hardly ensure a fair return for the farmers. Spot transactions, being mostly offline, lack audit trail. Different prices for the same commodity in different parts of the country give rise to arbitrage opportunities for traders. Further, driven by the need for immediate cash, most farmers engage in distress sale after harvest when supply exceeds demand and price is at its lowest.

Ex **1** Private funding in agricultural activity will significantly improve productivity.

Ex **2** Traders are largely benefited due to distress sale of agriculture produces.

Ex **3** Prices of agricultural produces are comparable throughout the country.

Ex **4** The prices of agricultural produce do not generate expected return at present.

Ex **5** Traders are at a disadvantage for lack of organised trade practices of agricultural produces.

Solutions (Example Nos. 1-5)

1. (*b*) A measure suggested is likely to be true.
2. (*a*) If farmers stand to lose in distress sale, then traders are obviously the gainers.
3. (*d*) The passage says that there are different prices for the same commodity in different parts of the country.
4. (*a*) It is obvious from the third sentence.
5. (*d*) It is the farmers who are being hurt; traders are benefiting from the lack of organised trade practices.

Directions (Example Nos. 6 - 8) Below is given a passage followed by several possible inferences which can be drawn from the facts stated in the passage. You have to examine each inference separately in the context of the passage and decide upon its degree of truth or falsity. **[NIFT (PG) 2013]**

Give answer

(a) if the inference is definitely true, *i.e.,* it properly follows from the statement of facts given
(b) if the inference is probably true though not definitely true in the light of the facts given
(c) if the data is inadequate , *i.e.,* from the facts given you cannot say whether the inference is likely to be true or false
(d) if the inference is definitely false, *i.e.,* it cannot possibly be drawn from the facts given or it contradicts the given facts

Urban lifestyles, fast foods, changing diet patterns, lack of exercise, obesity and smoking are responsible for increase in the incidence of diabetes, heart attacks and cancer. Research has also shown, that modern cooking oils have an unhealthy ratio of harmful fatty acids to essential fatty acids, which contribute to free radical attacks and increase insulin resistance. Ghee, coconut oil and mustard oil have a healthy ratio of fatty acids. Their use in rural India, coupled with a traditional high fiber diet and physical exercise, probably account for the lower incidence of diabetes and heart attacks in the rural population, the study reveals.

Ex **6** Rural people should not migrate to urban cities, if they value their health.

Ex **7** Most of the rural population is healthy and free of diseases.

Ex **8** The increase in diseases like diabetes, heart attacks etc is controllable by taking proper measures.

Solutions (Example Nos. 6-8)

6. (*b*) From the above facts, it is probably true, that rural people should not migrate to urban cities, as there the way and standard of living is different from that of rural areas, so it will be hard for them to adjust but it is not definitely true as with time they can adjust.

7. (*a*) It is definitely true that most of the people from rural areas are healthy because of their diet and regular exercise, it properly follows from the facts of paragraph given.

8. (*b*) The statement is probably true but from the facts given in paragraph, it cannot be deduced that it is definitely true.

Directions (Example Nos. 9-10) A passage is given followed by some inferences. You have to examine each inference separately in the context of the passage and decide upon its degree of truth or falsity. **[CG PSC 2013]**

Give answer

(a) if you think the inference is 'definitely true'

(b) if you think the inference is 'probably true'

(c) if the data given is inadequate

(d) if you think the inference is 'probably false'

(e) if the inference is 'definitely false'

The water resources of our country are very much underutilised. The main reason of this underultilisation is the lack of capital and technology. A large portion of our water resources is wasted due to floods and unwise use of water for irrigation as well as domestic purposes. We can make full use of our water resources by building dams on river and by adopting policy of awareness among people not to waste water.

Ex **9** Conservation of water resources is possible through wise use of water.

Ex **10** Technology does not have any effect on uses of water utilisation.

Solutions (Example Nos. 9-10)

9. (*a*) It has been reported in the passage that conservation of water resources is possible through wise use of water, so the inference is definitely true.

10. (*e*) In the given passage, technology, is considered crucial for water utilzation. So, the inference technology does not have any effect on uses of water utilization is definitely false.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-62) Questions in the form of inferences/ conclusions are based on the passages given below. Each passage is followed by five inferences. You are required to examine each inference separately in the context of the passage and decide upon its degree of truth or falsity.

Give answer

(a) if the inference is definitely true, *i. e.*, it properly follows from the statement of facts given
(b) if the inference is probably true though not definitely true in the light of the facts given
(c) if the data are inadequate *i. e.*, from the facts given you cannot say whether the inference is likely to be true or false
(d) if the inference is probably false though not definitely false in the light of the facts given
(e) if the inference is definitely false *i. e.*, it cannot possibly be drawn from the facts given or it contradicts the given facts

Passage 1

Asia has become the growth centre of the world economy in recent years. Within the region, India and South Korea are the third and fourth largest economies after China and Japan. Though the Asian growth stories mainly revolve around India and China, South Korea has remained a key player for these countries as one of their major trading and investment partners. South Korea adopted outward oriented economic policies with the beginning of its first five-year economic development plan in 1962, which resulted in high growth and the integration of the Korean economy with the rest of the world.

Subsequently, high and consistent economic growth made South Korea one of the high-income economies in Asia. South Korea is still growing at a faster rate compared to other developed economies. India on the other hand adopted an import substitution policy, since its independence until the early 1990. Since, then India has introduced wide ranging economic policy reforms and is moving towards market driven economy. This has resulted in consistent high economic growth over the last one and half a decades. **[SBI (PO) 2010]**

1. Only Korean economy is considered as robust by the international community.

2. Japan's economic growth over the last decade is the highest in Asia.

3. The Korean economy is traditionally different than the Indian economy in its approach.

4. The economic growth of India prior to 1990s was much higher than the present growth rate.

5. India and China together are considered to be the driving force of the Asian economy.

Passage 2

The first time I saw The Wizard of Oz, the story bewitched me. The second time I saw the Wizard of Oz, the special effects amazed me. The third time I saw The Wizard of Oz, the photography dazzled me. Have you ever seen a movie twice, three times? You notice subtleties and hear sounds you completely missed the first time around.

It's the same on the phone. Because your business conversations are more consequential than movies, you should listen to them two, may be three times, often we have no clear idea of what really happened in our phone conversation until we hear it again. You'll find shadings more significant than the colour of toto's collar and more scare crows than you imagined who 'haven't got a brain!'

How do you listen to your important business conversation again? Simply legally and ethically tape record them. I call the technique of recording and analysing your business conversations for subtleties.

[PNB (PO) 2010]

6. The movie 'The Wizard of Oz' will help improve business conversation.

7. For most, if they watch a movie more than once, different aspects in different order, like special effects, photography, story, music etc., would impress in a better way.

8. The tips are given for understanding business conversation.

9. The advice is being given to the sales team.

10. The author watches most movies more than twice.

Passage 3

Urban services have not expanded fast enough to cope with urban expansion. Low investment allocations have tended to be underspent. Both public (*e.g.*, Water and sewage) and private (*e.g.*, Low income area housing) infrastructure quality has declined. The impact of the environment in which children live and the supporting services available to them when they fall ill, seems clear. The decline in average food availability and the rise in absolute poverty, point in the same unsatisfactory directions. **[IDBI Bank (PO) 2010]**

11. There is nothing to boast about urban services.

12. The public transport system is in the hand of private sector.

13. Birth rate is higher in urban areas as compared to rural areas.

14. Low cost urban housing is on the priority.

15. The environment around plays a important role on the health status.

Passage 4

There is some controversy about the percentage of population below the poverty line in India. The criteria for the poverty line is basis on person's nutritional requirement is terms of calories. It is assumed that the minimum nutritional requirement per person per day in rural areas is 2400 calories whereas it is 2200 calories in urban areas. If the household is unable to bear the expenditure for this level of nutrition, it is categorised as below the poverty line. There is also a view that alongwith calories, the amount of protein intake be treated as a criterion as it is related to physical energy, mental alertness and resistance to infection. **[SBI (PO) 2010]**

16. Many Indians, who below the poverty line, get necessary amount of proteins.

17. People living above the poverty line are less likely to suffer from infections.

18. India's poverty alleviation programmes can only succeed after reaching agreement about the poverty line.

19. People in urban areas are less physically weak compared to people in rural areas.

20. In other countries, there is no controversy about defining the poverty line.

Passage 5

A radical new surgery procedure launched not long ago in India, is holding out fresh hope for patients of cardiac myopathy or enlargement of the heart. The technique new in India, allows patients to go home two weeks after the operation to lead a near normal sedentary life.

Cardiac myopathy is a condition that has a variety of causative factors. An attack from one of the 20 indentified viruses, parasite infection, long term alcohol abuse and blood pressure could bring it on and in rare cases, it could follow child birth and is even known to run in families. The condition is marked by an increase in the size of heart's chambers and a decrease in the efficiency of pumping. **[BOI (PO) 2009]**

21. The cardiac myopathy slows down the heartbeat.

22. Cardiac myopathy is hereditary.

23. Earlier, the patients suffering from the cardiac myopathy were required to travel abroad for such operations.

24. The new technique was never tried in India in the past.

25. The efficiency of the heart is inversely proportional to the size of the heart.

Passage 6

The latest data to show that the overall power situation has gotten worse, with the ratio for peak-load shortages now the highest in a decade. In absolute terms, the power deficit has hit record levels and seems almost certain to further deteriorate without real reforms on the ground. Even as aggressive technical and commercial losses in the power system remain much high at over a third of total generation, pan India capacity addition is now well below target.

A shortage of equipment and skills is blamed for the marked slowdown in augmenting power capacity but the dearth of resources can only be relative. Infact, the real bane of the sector is continuing revenue leakage in the state power utilities and unacceptably high aggregate technical and commercial losses, much of it plain theft of electricity. Given, the preponderance of state utilities in power supply, the fact that they remain very much in red does affect investor comfort and return funds flow. **[SBI (PO) 2008]**

26. Indian power generation is largely controlled by private sector.

27. Reform in power sector in India has not yet attained its desired level.

28. Indian power sector is yet to attain status comparable to developed countries.

29. Power theft is one of the major components of revenue losses in power sector.

30. Aggregate technical and commercial loss is much less than 30% of the total power generation.

Passage 7

Domestic steel industry has been going through challenging times with raw material prices rising unabated and Government trying to cap final product (steel) prices in order to keep inflation under check. Notably, the Government has taken several measures in the past six months to keep a check on steel prices. which contribute around 3.63% of WPI. Now, after holding prices for three months the battle between the Government and steel players has erupted again.

With the anticipation of players increasing prices very soon, Government is trying to counter this with the imposition of a price band on steel products. Imposition of price band may unfairly treat the domestic steel industry as global steel prices are ruling at 30% premium to domestic prices. Global prices have increased by 50% to 60% in 2008 as compared to just 20% rise in the domestic market. **[Syndicate Bank (PO) 2008]**

31. Some countries in the Western World have fixed a price band for steel products in their domestic markets.

32. Government move to fix a price band of steel prices may adversely affect the steel manufacturing units in India.

33. Price of steel is an integral part of the Wholesale Price Index (WPI) of India.

34. There has been a decline in the rate of inflation in recent months in India.

35. In recent past, the increase of steel prices in the international market is much lower than that in the domestic market.

Passage 8

Data available from the National Institute of Nutrition (NIN) compares, separately for boys and girls, the average height recorded during 1979 with the 10 States covered by the period 1974-79 at different ages in the average for the NNMB survey. The 1979 height turns out to be neither uniformly higher nor uniformly lower than the 1974-79 average highest at ages 2, 5 and 9 in most of the States.

However, the comparison at age 13 is more meaningful as it represents the cumulative result of childhood growth. At the age of 13 yr, the average height recorded for boys in 1979 is lower than the average for 1974-79 in only one State, Karnataka. For girls at this age, the average hight recorded in 1979 turns out to be lower than the 1974-79 average in four States Andhra Pradesh, Gujarat, Madhya Pradesh and Uttar Pradesh. In all other States, the 1979 average was greater than or equal to the 1974-79 average. **[UCO Bank (PO) 2010]**

36. There are only two institutes NIN and NNMB which have collected data on average height.

37. The data from Karnataka was collected by both NIN and NNMB.

38. In Karnataka, the average age recorded in 1979 for both boys and girls was lower than that for 1974-79.

39. More States indicated higher average in 1979 as compared to that of 1974-79.

40. Both the institutes NIN and NNMB collected data from 10 States only.

41. Separate statistics for boys and girls help understand the data in a better way.

42. There may be large differences in the height of boys and girls from 2nd and 5th year.

Passage 9

Doordarshan has undoubtedly helped popularise yoga among the people especially city dwellers but performing various 'asanas' without adequate instructions could be hazardous, according to a renowned 'yoga expert' who has conducted hundreds of yoga shivirs (camps).

He says serval people, who tried to learn yoga through the programme of Doordarshan, have come to him complaining of pain in different parts of their body. He explains that the asanas involve a complicated but scientific technique of breathing which controls the flow of oxygen in various parts of the body under calculated stress. **[BOI (PO) 2009]**

43. TV programmes on yoga have successfully replaced personal guidance by 'yoga experts'.

44. Yoga exercises (asanas) are quite safe for any person.

45. Many TV viewers of yoga programmes are unable to master the scientific technique of breathing while performing 'asanas'.

46. Uncontrolled flow of oxygen in parts of the body causes pain in those parts.

47. Quite a large number of 'yoga experts' are available.

Passage 10

The most empirical argument in favour of prayer is that it relieves the mind of tension, which is the natural concomitant of a life of hurry and worry.It neutralises mental repressions and purifies the subconsciousness. It releases an extra amount of hope and energy and thus enables a person to face life squarely. Life is not all sweetness, enjoyment and success, it is drudgery, pain and failure too. **[UBI (PO) 2008]**

48. Prayer is an important part of all religions.

49. People are interested in finding out effects of prayer.

50. Subconsciousness plays no role in our life.

51. There are some arguments for the benefits of prayer, which can be tested.

52. Prayer, by direct miracles, removes hurdles and difficulties from our life.

Passage 11

Between 2002-03 and 2006-07 Indian economy grew annually at 8.7% led by the services sector at 9% per year. In 1990, India's share of services at 40% of GDP was consistent with its per capita income for low income country. By 2001, its share of one-half of the GDP was higher by five percentage points, compared to the average for low income countries.

Economic reforms that energized the private corporate sector and technological changes that opened up new vistas in telecommunications, IT and outsourcing are believed to be responsible for the impressive performance. However, the services led growth remains a puzzle at a low per capita income, with 55% of the workforce still engaged in agriculture and when agriculture decelerated and industry stagnated defying a styled fact in Economics. **[UCO Bank (PO) 2009]**

53. Share of services sector in India's GDP crossed the halfway mark in early 2000.

54. India has now emerged as a high per capita income country.

55. Growth in India's services sector post 2005 is more than 9%.

56. In early nineties, the share of services sector in GDP for low per capita income group of countries was about 40%.

57. Less than half of total workforce is engaged in agricultural sector in India.

Passage 12

In its most ambitious bid ever to house 6 crore slum dwellers and realize the vision of a slumfree India, the Government is rolling out a massive plan to build 50 lakh dwelling units in five years across 400 towns and cities. The programme could free up thousands of acres of valuable Government land across the country and generate crores worth of business for real estate developers. Proliferation of slums has had an adverse impact on the GDP growth for years.

Slum dwellers are characterised by low productivity and susceptible to poor health conditions. The Government believes that better housing facilities will address social issues and also have a multiplier effect and serve as an economic stimulus. **[PNB (PO) 2009]**

58. Health and sanitary conditions in slums are far below the acceptable norm of human habitat in Indian cities and towns.

59. Cities and towns of developed countries are free from slums.

60. Per capita income of slum dwellers is significantly lower than those living in better housing facilities.

61. Majority of the slums in cities and towns in India are on prime private properties.

62. Development of land occupied by slums in cities of India will not have any effect on the common public.

Directions (Q. Nos. 63-97) Each of these questions has a statement based on the preceding passage. Evaluate each statement.

Give answer

(a) if the statement is a Major Objective in making the decision; one of the goals sought by the decision maker

(b) if the statement is a Major Factor in making the decision; an aspect of the problem, specifically mentioned in the passage, which fundamentally affects and/or determines the decision

(c) if the statement is a Minor Factor in making the decision; a less important element bearing on or affecting a Major Factor, rather than a Major Objective directly

(d) if the statement is a Major Assumption in making the decision; a projection or supposition arrived at by the decision maker before considering the factor and alternative

Passage 13

Morgan Stanley on Monday became the second large global giant to exit India's crowded and barely profitable mutual fund industry when it agreed to sell its business to HDFC, the country's biggest mutual fund manager. HDFC Mutual Fund (MF), with assets of ₹ 1.03 lakh crore, agreed to buy all eight schemes of Morgan Stanley with combined assets of ₹ 3290 crore.

The purchase is expected to help the fund widen the gap with Reliance, the second biggest mutual fund house and consolidate its position at the top of the industry. Reliance has assets worth ₹ 93249 crore. Morgan was the first global giant to launch a mutual fund in India in 1994 after liberalisation but its performance in the country has been rather lacklustre.

Its asset size is small by international and Indian standards and like Fidelity it has been unable to keep pace with the growth of Indian mutual funds such as HDFC MF, Reliance MF, ICICI Pru, UTI MF and Birla Sunlife which between them control over 50% of the industry' size. The fund posted losses in both 2011 and 2012. The mutual fund and insurance industry must go through consolidation. Small funds are not viable and more people are beginning to sense that.

The opportunity cropped up as Morgan Stanley approached us, Chairman HDFC told. Tough business conditions are forcing many Asset Management Companies (AMCs) to either rope in strategic partners or exit the business completely. India has about 44 mutual fund houses with numerous schemes and they compete for investors money in the main cities of Mumbai and Delhi.

The proportion of small savers investing in these schemes is not very high and the funds depend upon cash rich companies and high net worth individuals for a bulk of their investments. The consolidation in the industry is likely to continue as industry faces tough times we believe only those companies can survive which have a strong distribution reach, said CEO of mutual fund AMC who did not want to be identified.

[NIFT (PG) 2014]

63. The purchase is expected to help the fund widen the gap with Reliance.

64. The asset size of Morgan Stanley is small by international and Indian Standards.

65. Small funds are not viable and more and more people are beginning to sense that.

66. Only those companies can survive which have a strong distribution reach.

67. Asset management companies are facing tough business conditions.

Passage 14

ING Groep NV, the biggest Dutch financial services company, is said to be seeking a buyer for its 43% stake in, ING Vysya Bank, as the pros pects of limited purpose banking in India and tough competition in retail market make it rethink its local strategy, five people familiar with the thinking said. ING, which has been selling assets across the Asian region and some in Europe itself to repay the Dutch Government for bailing it out from the 2008 credit crisis, may exit the domestic banking business comprising retail, corporate and treasury, to focus on corporate banking. they said.

The group, which also has to bolster capital to meet the Basel III regulations, may get atleast $ 600 million at current market prices, or even more for the stake depending on the transaction There is no certainty that a deal will happen.

Although ING Vysya may be an attractive asset for every private sector bank because of its clean books, 575 branches and loyal customer. Kotak Mahindra Bank seems to be best placed to benefit from the acquisition of ING Vysya, say analysis. It is a very good business and it (ING Vysya) provides Kotak the opportunity to scale up, said chief mentor BMR and Associates, an advisory firm.

Although Kotak's market value is about six times that of ING Vysya, Kotak's loan assets is about ₹ 50539 crore, compared with ING's ₹ 33575 crore regulatory filings show ING's ₹ 40000 crore of deposits, of which a third is low cost and its customer loyalty may be the most attractive part. But Kotak said it is not negotiating for a takeover. 'We have not been approached for purchase of shares of ING Group in ING, Vysya Bank, said a Kotak Mahindra Group spokesman in an e-mail response.

'We have had no negotiations with officials of ING, Vysya Bank on this matter.' For Kotak, it might make sense to go for a stock-swap deal, since it could achieve twin objectives of the management, said one of the persons familiar with the thinking. There will be no cash outflow and at the same time help founder Uday Kotak to reduce his stake in the bank to meet regulations.

The Reserve Bank of India last June directed Uday Kotak to lower his stake in the bank to 10% over the next eight years. It is at 44% now, filings show International banks in India are redrawing their strategy as the industry goes through tough capital requirements after the credit crisis. Institutions such as JP Morgan Chase and Co have decided to remain a corporate and investment banking company in India and others such as Barclays are moving toward that, shedding retail, the Reserve Bank of India's decision to possibly mandate local incorporation many lead to further changes. **[NIFT (PG) 2014]**

68. ING Groep NV, the biggest Dutch financial services company perceives that there is tough competition in retail market.

69. ING will focus on corporate banking.

70. The group may get atleast $ 600 million at current market price.

71. ING Vysya has 575 branches.

72. The industry in India is going through tough requirements after the credit crisis.

Passage 15

The railroads was not the first institution to impose regularity on society or to draw attenion to the importance of precise time keeping. For as long as merchants have set out their wars at day break and communal festivities have been celebrated, people have been in rough agreement with their neighbours as to the time of day. The value of tradition is today mor apparent than ever. Were it not for public acceptance of a single yardstick of time, social life would be unbearably chaotic. The massive daily transfer of goods. Services and information would proceed in fits and starts, the very fabric of modern society would begin to unravel. **[NIFT (PG) 2014]**

73. An accepted way of measuring time is essential for the smooth functioning of society.

74. In modern society we must make more time for our neighbour's.

75. Society judges people by the time at which they conduct certain activities.

76. The Phrase 'this tradition' in the passage refers to people's agreement on the measurement of time.

77. Railroad supports precise time keeping.

Passage 16

McLeod Russel India Ltd (MRIL) is keen to make further acquisitions in Rwanda where it already has a presence. "Rwanda is on our scanner now", sources said. MRIL, which had bought into a Government-owned tea oufit in the African country in 2010, has so far had a good experience, according to sources. Following a privatization drive in Rwanda, the Government had divested 60% of its stake in this estate while retaining 30%. The remaining 10% has been given to a workers, cooperative. "This is as per the divestment policy of the Government." At present, two more tea estates-Mulundi and Saggasa have been put on the block for which bids have been invited by the Government.

MRIL may bid for these two estates after getting a nod from its board. The Gisovu tea estate in Rwanda, which was bought earlier this year, contributed 2 million kg out of the 23 million kg tea crop that McLeod Russel reaped out of its overseas estates in Vietnam, Rwanda and Uganda. "Production increases were recorded from our tea estates in all these three countries," say sources.

The company's overseas foray started with acquisition of the Phu Ben Tea Company in Vietnam in 2008-09. From a production level of 4.5 million kg, Phu Ben now produces around 5 million kg.

The B M Khaitan group company believes that the only way to grow is through acquisition and since 2005 it has made quite a few acquisitions within the country. In 2010, it completed its acquisition of the Ugandan tea company, Rwenzi Tea Investments Ltd, from James Finlay International Holdings Ltd. of the UK through its wholly-owned subsidiary Borelli Tea Holdings (UK), the outfit through which McLeod Russel makes its overseas acquisitions. MRIL, which makes its acquisitions through a mix of debt and internal accruals, currently has reserves of around ₹ 900 crore. "Our debts are set to decline to ₹ 260 crore by 31 March, 2012, from ₹ 316 crore at end-March 2011 and we have enough liquidity to fund any future acquisition," sources said. **[NIFT (PG) 2012]**

78. The privatisation drive by the Government of Rwanda.

79. The company's belief that the only way to grow is through acquisitions.

80. The debts of MRIL are set to decline in the coming months.

81. The board of MRIL, will give its permission to bid for two more tea estates in Rwanda.

82. Making further acquisitions in Rwanda.

Passage 17

A slowing economy, rising fuel prices and high taxes hit Indian aviation in 2012. Strikes at Air India and a bleeding Kingfisher added to the heat because foreign airlines would not pick up stakes in cash-strapped Indian carriers unless steps are taken to stem high costs of aviation operations in India, International Air Transport Association (IATA) chief Tony Tyler said, No, I don't think it (allowing foreign airlines to invest in Indian carriers) is a game changer but it is a good thing, said Tyler in but it will not solve the problems of Indian aviation.

It is a step in the right direction but not the panacea that some believe it is', 'As long as high taxes prevail, high airport costs and congestion and poorly developed air navigation (services) means more congestion, high cost of operations exist, you are not going to get a lot of people to invest in airlines,' the director-general and CEO of IATA said. Observing that there were restrictions on investing in airlines around the world, which was 'a problem for the industry', Tyler said "any move that we see in liberalising is a good thing. 'But unless conditions in India are improved for airlines, you are not going to see a flood of foreign carriers coming into the industry. Because foreign capital needs a return just as anywhere else." he added.

[NIFT (PG) 2013]

83. Foreign capital should he invested in Indian aviation.

84. There is a slowing Indian economy.

85. There were strikes at Air India.

86. Foreign airlines would pick up stakes in Indian carriers,

87. There is a poorly developed air navigation leading to more congestion.

Passage 18

Wipro Consumer Care and Lighting, part of Wipro, plans to enter body lotions and shampoo categories with its flagship brand Santoor. "While the category is highly competitive, there is a lot of headroom to grow as penetration level is significantly lower in India compared to other markets," according to the president at Wipro Consumer Care. The company started test marketing, the hair care and body lotion products recently. Wipro Consumer, which recorded a 17% increase in its revenues in the third quarter and ended December at ₹ 1028 crore, also expects hall of its total sales to come from international business with the addition of Singapore-based FMCG firm LD Waxsons.

At present international operations contribute 40-45% to its revenues, Wipro Consumer acquired LD Waxsons for about $144 million (approx ₹ 775 crore). During the third quarter, its Indonesia and Vietnam businesses grew 26% and 24%, respectively, while China and middle East grew by 32%.The Santoor brand has been growing over 20% in the last few quarters. It is the third largest soap brand in the country after Hindustan Unilever's Lifeboy and Lux and has market leadership in South and Western India. Last month, it became the top brand in states such as Maharashtra , Karnataka and Gujarat.

However, it's a huge task for Wipro to replicate a similar feat in the ₹ 4500 crore shampoo market, where HUL is by far the leader with over 50% market share. Also, margins have moderated in the past on account of promotions and ad spends, says a recent report by JP Morgan. Hence, companies such as Proctor and Gamble and L'Oreal are introducing various premium products like hair treatments, serums, hair masks, hair conditioners to help support margin profile for their hair care portfolio. **[NIFT (PG) 2013]**

88. Expanding in the body lotion and shampoo category is easier due to low penetration levels in India.

89. Santoor is an established brand in certain markets and hence, it will be easier to grow.

90. Margins in the shampoo market decreasing due to increasing promotion and ad spends.

91. Ensuring growth in international markets through the Waxsons acquisition.

92. Significant growth in the international businesses of the company.

Passage 19

The Union Commerce and Industry Minister on Friday unveiled a new corporate logo for the National Textile Corporation (NTC), reflecting the new face of the state-owned enterprise as part of the plans to make it a world-class textile company. "The Government is committed to making NTC a world-class eco-friendly integrated textile company and flag bearer of the sector. The ongoing revival-cum-modernization programme and new corporate and brand identity launch by NTC is aimed at achieving this goal", he said at a function organised for the purpose.

He said NTC was a key player in the textile sector and its recent moves would definitely transform it into an integrated company capable of addressing the needs of the nation. NTC had made a turn-around within a short span to emerge as a debt-free company with a highly competitive revival strategy, he added. He also launched two new look retail stores of NTC-one in Delhi and another in Coimbatore, Tamil Nadu via satellite link up. This is a part of revamping of NTC's 93 stores to reflect the company's new face across the country.

Speaking on the occasion, the Textile Secretary said the revamp and modernization steps taken by NTC in the recent past in view of the changing times and consumer aspirations of modern India would help in instilling confidence in the minds of all stakeholders. The NTC Chairman and Managing Director said the new corporate logo reflected the new face of NTC to the world. It had been designed as free flowing fabric, indicating the new aspirations and changing aspirations of India.

Apart from re-branding, NTC had developed a new marketing and corporate strategy that included revamping of all NTC stores and setting up of new stores, he said. The internal marketing programme to employees and key customers includes undertaking a complete programme to bring the new vision and culture to its employees. Respective mill managers would be conducting a smaller unveiling ceremony of the new logo along with the NTC anthom at all the mills. Besides, all the employees would be given a small commemorative badge of the new logo. **[NIFT (PG) 2012]**

93. Making NTC a world-class integrated textile company and the leader of the Indian textile industry.

94. The new corporate logo of NTC reflects its new face to the world.

95. The highly competitive revival strategy that helped make NTC debt-free.

96. The recent modernisation steps taken by NTC would instill confidence in the minds of all stakeholders.

97. Implementing a programme to bring the new vision and culture to the employees of NTC.

Response & Interpretations (Master Exercise)

1. (*e*) China, India and Japan also have robust economies.

2. (*b*) It is clear from the second line of the passage.

3. (*a*) South Korea adopted "outward oriented economic policies," while India continued with "import substitution policy".

4. (*e*) It is obvious from the last sentence of the passage.

5. (*b*) The Asian growth stories mainly revolve around India and China.

6. (*e*) The movie has been used just as a example of how repeated interactions aquaint us with a fuller meaning.

7. (*b*) Could even have been 'definitely true' except that question number 8 below is a sure shot.

8. (*a*) Properly follows the statement of facts given.

9. (*c*) It could be given to any individual or any business team.

10. (*d*) Note the line in "Have you ever seen … ?"

11. (*a*) It is clearly mentioned in the opening lines of the passage that urban services have deteriorated due to meager finances and related supports.

12. (*c*) It is not mentioned anywhere in the passage that public transport system is in the hands of private sector.

13. (*c*) Data regarding comparative birth rate are not given in the passage. Hence, data is inadequate.

14. (*b*) It is given in the passage that private infrastructure quality *i.e.*, low income area housing has declined. Therefore, it is very likely that low cost urban housing gets priority.

15. (*a*) This is clearly given in the passage that environment plays an important role on the health status. Hence, conclusion definitely follows from the passage.

16. (*c*) Data given in the passage is inadequate.

17. (*b*) It is given in the last line of the passage that protein is related to resistance to infections. Since, people above poverty line may get sufficient amount of protein intake and so are less likely to suffer from infections.

18. (*c*) Nothing has been discussed in the passage regarding agreement about poverty line.

19. (*b*) It is probably true because calorie requirement per person in the urban areas is less than that of the rural areas.

20. (*c*) Nothing has been given in the passage regarding the poverty line in the other countries.

21. (*b*) Conclusion is probably true because it is given in the last line that cardiac myopathy is a result of enlargement of heart's chamber and decrease in the efficiency of pumping.

22. (*a*) Conclusion is definitely true as it is given in the passage that cardiac myopathy could follow child birth.

23. (*c*) Data given in the passage is inadequate to analyse this conclusion as nothing has been given regarding the facility available for this disease earlier in India.

24. (*a*) Opening line of the passage reads "a radical new surgical procedure launched not long ago is holding fresh hopes". *i.e.*, this surgery has not been used in India earlier.

25. (*a*) Conclusion is definitely true from the last line of the passage that the condition is marked by an increase in the size of heart's chamber and a decrease in efficiency of pumping.

26. (*e*) The passage talks of "preponderance of state utilities" in power supply.

27. (*a*) The passage clearly says that there has been no "real reforms on the ground".

28. (*b*) Seems true on the basis of the grim scenario of the power sector painted in the passage.

29. (*a*) Just go through the second last sentence.

30. (*e*) They are "over a third of total generation".

31. (*d*) Such a scenario is unlikely when "global steel prices are ruling at 30% premium to domestic prices".

32. (*a*) This move will only worsen the "challenging times".

33. (*a*) Obvious from the first two sentences.

34. (*d*) This is unlikely given the Government's dogged efforts to keep steel prices and inflation under control.

35. (*e*) Read the last sentence.

36. (*c*) It is not given in the passage that there are only two institutes. There can also be more than two institutes. So, data are inadequate.

37. (*a*) It is given in the passage that data from Karnataka were collected by both the institutes. So, the conclusion is definitely true.

38. (*e*) The last line of the passage indicates that the height of girls is not lower in Karnataka.

39. (*a*) It is very clear from the last line of the passage.

40. (*c*) It is not given in the passage that institutes NIN and NNMB collected data from 10 States only.

41. (*b*) Conclusion seems to be probably true is it can be inferred from the passage that separate statistics certainly help.

42. (*b*) Conclusion is probably true as it is clearly given in the passage that at the age of 2, 5 and 9 comparative heights neither turn out to be uniformly higher nor lower.

43. (*e*) Definitely false. It is given in the passage that persons doing asanas complain of pains. Hence, it is definitely false to say that TV programmes on yoga have successfully replaced personal guidance by the yoga expert.

44. (*e*) It is given in the passage that without adequate instructions, yoga could be hazardous. Hence, the conclusion is definitely false.

45. (*a*) It is given in the passage that 'asanas' involve scientific technique of breathing which is the main reason for many complaints of pain.

46. (*b*) Conclusion is probably true because uncontrolled flow of oxygen in various parts of body causes pain in these parts.

47. (*c*) Data is inadequate, as it is not given in the passage that quite a large number of yoga experts are available.

48. (*c*) Data is not adequate, as it has not been given anywhere in the passage whether prayer forms an important part of all religions or not.

49. (*e*) Conclusion is definitely false, because effects of prayer are argueable as per opening line of the passage.

50. (*e*) Conclusion is definitely false, because it has been given in the passage that prayer purifies the subconsciousness. Hence, subconscious has a role in our life.

51. (*a*) Conclusion is definitely true, as it has been given in the opening line of the passage.

52. (*e*) Conclusion is definitely false because as in the given passage, prayer has an indirect impact on the life of human beings.

53. (*c*) There is nothing in the passage which determines the share of services sector precisely "in early 2000".

54. (*e*) The passage clearly says that in the Indian context, the services led growth remains a puzzle at a low per capita income.

55. (*b*) Probably true from the first sentence of the passage.

56. (*b*) Deduced from the second sentence of the passage.

57. (*e*) 55% is engaged in agriculture.

58. (*a*) Obvious from the passage.

59. (*c*) There is no explanation about developed countries in the passage.

60. (*a*) Since slum dwellers are characterized by low productivity.

61. (*b*) Probably true from the passage.

62. (*e*) Conclusion is definitely false.

63. (*c*) Statement is a minor factor in making the decision as it is not mentioned further in the passage any where.

64. (*b*) Statement is a major factor in making the decision as it shows a causal dependency with the consequence.

65. (*b*) Statement is a major factor in making the decision as it is mentioned in passage.

66. (*d*) Statement is a major assumption in making the decision as it includes the personal view.

67. (*b*) Statement is a major factor in making decision as it is mentioned in passage with facts and figures.

68. (*d*) Statement is major assumption in making the decision as it is not firmly presented paragraph anywhere.

69. (*a*) Statement is a major objective in making the decision as it is clear in passage.

70. (*d*) Sentence is a major assumption in making the decision as it based on future prospects.

71. (*b*) Sentence is a major factor in making the decision as its aspect is clearly depicted in passage.

72. (*b*) Sentence is a major factor in making the decision as it is clearly mentioned in passage.

73. (*a*) Statement is a major objective in making the decision one of the goals sought by the decision maker.

74. (*c*) Statement is a minor factor in making the decision, a less important element bearing on or affecting a major factor rather than a major objective directly.

75. (*c*) This statement is minor factor in making the decision.

76. (*a*) The phrase, this tradition, refers to the preceding clause 'people have been in rough agreement with their neighbours as to the time of day' means people don't have enough time for social activities.

77. (*d*) This statement is major assumption made in the passage.

78. (*a*) The decision is major decision that drove the Government of Rawanda towards disinvestment of 60%.

79. (*d*) The belief of a company is an assumption. It has assumed that, through acquisition only, we can achieve the growth and development.

80. (*d*) The assumption of decline in debt of MRIL has been made.

81. (*a*) It is a major decision as the company is increasing it's production.

82. (*c*) A statement is a minor factor in making decisions as the current acquisitions are enough to further invest and is a economically feasible event.

83. (*a*) It is the major objective as foregin capital will help the Indian aviation to come out of the crisis, that it is facing right know.

84. (*b*) The slowing down of the economy is a major factor for decision make to make the decision, an aspect of the problem

85. (*b*) Strikes at Air India is also a major factor for the decision maker to reach to the decision an important aspect of the problem.

86. (*c*) It is a minor factor that foreign airlines would pick up states in Indian carries as compared to others, it will help the Indian aviation to grow, but other factors are more important.

87. (*d*) Poorly developed air navigation leading to more congestion is the major assumption as, this is the primary problem before which any factors or objective is considered. This has played a major role for the current situation of the Indian aviation.

88. (*d*) Expanding in the body lotion and shampoo category is easier due to low pentration level in India is a major assumption for the decision maker before considering any aspect.

89. (*a*) It is the major objective because the ultimate aim is to grow and as it has already established brand of santoor, which will help it to grow.

90. (*c*) It is a minor factor for the decision maker, as if its market grows, then he can spend easily on ads etc.

91. (*b*) As the decision maker has ensured its growth in international market, so it is a major factor for the decision maker to reach to that decision to expnd it business in India.

92. (*b*) Significant growth in international market is also a major factor for the decision maker to reach that decision to expand its business in India in other producs and aspects.

93. (*a*) This is because the NTC to be made worldclass is a goal that will change the view of textile industry.

94. (*d*) This is because when the new logo of NTC was formulated it was assumed that some targets will be achieved through this step.

95. (*a*) Because the review of competitive strategy helped them to achieve the goal of making the industry debt free.

96. (*d*) The steps are taken assuming the future results to be achieved.

97. (*d*) The programme has been implemented assuming the new vision will be coming with cultural innovations that will benefit the employees of NTC.

6

Assertion *and* **Reason**

Assertion is a strong and forceful statement or claim made in regard with a thing, element for its use and effects. Reason means a fact, event or statement that provides an explanation to the assertion.

This chapter is basically designed to judge the candidate's technical knowledge and his ability to reason out correctly. In the questions, two statements are given. Out of these two statements, one is the Assertion (A) and other is the Reason (R) : It is required to analyse whether the reason is an optimum and correct explanation of the assertion. Some times both assertion and reason are correctly stated facts but the reason does not correctly explain the assertion. So, different possibilities can exist between these two statements and accordingly the correct answer is marked from the given alternatives.

The examples given below will give you a better idea about 'Assertion and Reason'

Directions (Example Nos. 1-2) Choose the correct alternative from the following options for the Assertion (A) and Reason (R) given below.

Give answer

(a) if Both 'A' and 'R' are true and 'R' is the correct explanation of 'A'
(b) if Both 'A' and 'R' are true but 'R' is not the correct explanation of 'A'
(c) if 'A' is true but 'R' is false
(d) if 'A' is false but 'R' is true
(e) if Both 'A' and 'R' are false

***Ex* 1** **Assertion** (A) Silver is not used to make wires.
Reason (R) Silver is a bad conductor.

Sol. (c) Silver is not used to make wires, hence Assertion is true but silver is not a bad conductor, it is a good conductor. Hence, Reason is false.

***Ex* 2** **Assertion** (A) In India, people elect their own representatives.
Reason (R) India is a democratic country.

Sol. (a) India is a democratic country and people here elect their own representatives. Therefore, both the Assertion and Reason are correct. Since, India is a democratic country, hence, people elect their own representatives. Therefore, Reason (R) is the correct explanation of the Assertion.

Directions (Example Nos. 3-6) Each of these questions has an Assertion (A) and a Reason (R).

Give answer

(a) if both 'A' and 'B' are true and 'R' is the correct explanation of 'A'
(b) if both 'A' and 'R' are true but 'R' is not the correct explanation of 'A'
(c) if 'A' is true but 'R' is false
(d) if 'A' is false but 'R' is true

Ex **3** **Assertion** (A) A body weights less when immersed in water.
Reason (R) Newton's law explains the above phenomenon. **[MAT 2013]**

Sol. (*c*) A is true and R is false. A body weights less when immersed in water but this law was given by Archimedes', not by Newton.

Ex **4** **Assertion** (A) The steam engine was invented by James Watt.
Reason (R) There was a problem of taking out water from flooded mines. **[NIFT (PG) 2014]**

Sol. (*a*) Both A and R are true and R is the correct explanation of A. The problem of pumping out water from the flooded mines required the need of a self-working engine which led James Watt to invent the same.

Ex **5** **Assertion** (A) We feel colder on mountains than on plains.
Reason (R) Temperature decreases with altitude. **[NIFT (UG) 2014]**

Sol. (*a*) Both A and R are true and R is the correct explanation of A. Above the sea level, temperature decreases with an increase in altitude which makes mountain peaks colder.

Ex **6** **Assertion** (A) The colour of light with the shortest wavelength is violet.
Reason (R) One can notice this colour of light on one end of the rainbow which has seven colours of different wavelengths. **[MAT 2011]**

Sol. (*b*) Both A and R are true but R is not the correct explanation of A.

Ex **7** In the following question, there are two statements labelled as Assertion (A) and Reason (R).

Assertion (A) Autism is a development disability.
Reason (R) Heredity and lower development of brain are the causes of the Autism. **[SSC (CGL) April 2014]**

(a) 'A' is false and 'R' is true
(b) Both 'A' and 'R' are false
(c) Both 'A' and 'R' are true
(d) 'A' is true and 'R' is false

Sol. (*c*) Both A and R are true.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-38) In each of the following questions, there are two statements labelled as Assertion (A) and Reason (R).

Give answer

(a) if both 'A' and 'R' are true and 'R' is the correct explanation of 'A'
(b) if both 'A' and 'R' are true but 'R' is not the correct explanation of 'A'
(c) if 'A' is true but 'R' is false
(d) if 'A' is false but 'R' is true
(e) if both 'A' and 'R' are false

1. Assertion (A) Salt is added to cook food at higher altitudes.
Reason (R) Temperature is lower at higher altitudes.

2. Assertion (A) Inside the Earth metals are present in molten state. [NIFT (UG) 2014]
Reason (R) Earth absorbs the Sun's rays.

3. Assertion (A) The British sovereignty continued to exist in India.
Reason (R) The British sovereign appointed the last Governor-General of free India. [MAT 2004]

4. Assertion (A) Indian President is the head of the state.
Reason (R) Indian Parliament consists of the President, Lok Sabha and Rajya Sabha.

5. Assertion (A) Increase in carbon dioxide would melt polar ice. [NIFT (UG) 2014]
Reason (R) Global temperature would rise.

6. Assertion (A) Aurangzeb failed in his Deccan policy.
Reason (R) He could not follow the policy of appeasement.

7. Assertion (A) We prefer to wear white clothes in winter.
Reason (R) White clothes are good reflectors of heat. [MAT 2005]

8. Assertion (A) Land breeze blows during night.
Reason (R) Land gets heated up quickly.

9. Assertion (A) Leakages in household gas cylinders can be detected.
Reason (R) LPG has a strong smell.

10. Assertion (A) We feel comfortable in hot and humid climate.
Reason (R) Sweat evaporates faster in humid climate. [MAT 2005]

11. Assertion (A) Bulb filament is made of titanium.
Reason (R) The filament should have low melting point.

12. Assertion (A) Shimla is colder than Delhi.
Reason (R) Shimla is at higher altitude as compared to Delhi.

13. Assertion (A) Ventilators are provided near the roof.
Reason (R) Conduction takes place better near the roof.

14. Assertion (A) Uttar Pradesh is called the 'Sugar Bowl' of India.
Reason (R) Uttar Pradesh is the leading sugarcane producer.

15. Assertion (A) Forest cutting is undesirable from the point of view of soil erosion.
Reason (R) Cutting of forests reduces the interception of rain water. [MAT 2008]

16. Assertion (A) Most of the Himalayan rivers are perennial.
Reason (R) They are fed by melting snow. [MAT 2008]

17. Assertion (A) Venus is placed distant from Sun as compared to Mercury, yet it is the hottest planet.

Reason (R) Immense carbon dioxide in the atmosphere of Venus creates a green house effect.

18. Assertion (A) Ashoka pillars have retained their gloss on their surface.

Reason (R) Moisture laden winds do not blow in the areas where it is located.

[MAT 2008]

19. Assertion (A) Pluto is the coldest planet.

Reason (R) It receives slanty rays of the Sun.

20. Assertion (A) Baking soda creates acidity in the stomach.

Reason (R) Baking soda is alkaline.

21. Assertion (A) Graphite is slippery and used as a lubricant.

Reason (R) Graphite has free electrons.

[NIFT (PG) 2014]

22. Assertion (A) There is rainbow in the sky only after rains.

Reason (R) Water drops suspended in the air break up Sun's rays into seven colours.

23. Assertion (A) Mohammad-bin-Tughlaq is called the 'wisest fool'.

Reason (R) He had wise plans but implemented them foolishly.

24. Assertion (A) DDT has now-a-days lost its use as an insecticide.

Reason (R) DDT is harmful to man.

25. Assertion (A) Buddha left home after his marriage.

Reason (R) He wished to be free of all worldly ties and become an ascetic.

26. Assertion (A) Carbon dioxide turns lime water milky.

Reason (R) Carbon dioxide sullies the water.

27. Assertion (A) Red-green colour blindness occurs with more frequency in males than in females.

Reason (R) Females have two chromosomes and males have one.

28. Assertion (A) Food materials should not be soaked in water for a long time.

Reason (R) Washing leads to loss of vitamin A and vitamin D from the food stuff.

29. Assertion (A) Pressure cookers are fitted with ebonite handles.

Reason (R) Ebonite is a strong conductor of heat.

30. Assertion (A) Earth is the only planet known to have life.

Reason (R) Earth has an atmosphere which is a mixture of oxygen, nitrogen and carbon dioxide.

31. Assertion (A) Leaves of plants are green.

Reason (R) Plants contain chromoplasts, the green pigment.

32. Assertion (A) The freezing of sea water during winter does not kill the fishes.

Reason (R) Only surface water is frozen.

33. Assertion (A) Moon cannot be used as a satellite for communication.

Reason (R) Moon does not move in the equatorial plane of the Earth.

34. Assertion (A) There is no vaccine for AIDS.

Reason (R) The AIDS virus changes its genetic code.

35. Assertion (A) In India, females have higher life expectancy than the males.

Reason (R) Females receive a better diet.

36. Assertion (A) Unpolished rice should be eaten.

Reason (R) Polished rice lacks vitamin B.

37. Assertion (A) No food materials normally enters the wind pipe during swallowing.

Reason (R) When we swallow, the back portion of our tongue covers the opening of the wind pipe.

38. Assertion (A) The western coast of India is characterized by the location of several sea ports.

Reason (R) Western coast has evidence of deep sea water.

Directions (Q. Nos. 39-62) Each of these questions has an Assertion (A) and a Reason (R).

Give answer

(a) if both 'A' and 'R' are true and 'R' is the correct explanation of 'A'
(b) if both 'A' and 'R' are true but 'R' is not the correct explanation of 'A'
(c) if 'A' is true but 'R' is false
(d) if 'A' is false but 'R' is true

39. Assertion (A) India's 'Republic Day' falls on 26th January.

Reason (R) Constitution of India, declaring India as a 'Republic', came into force on 26th January 1950. **[MAT 2013]**

40. Assertion (A) India is a democracy.

Reason (R) India is a developing country. **[MAT 2013]**

41. Assertion (A) In India, the judiciary is independent of the executive.

Reason (R) Judiciary favours the government and helps in the implementation of its plans. **[NIFT (PG) 2014]**

42. Assertion (A) A salt water fish drinks sea water whereas a fresh water fish never drinks water.

Reason (R) A salt water fish is hypertonic to its environment while a fresh water fish is not hypertonic to its environment.

43. Assertion (A) River Narmada flows westward.

Reason (R) Narmada falls into the Bay of Bengal.

44. Assertion (A) Carbon monoxide when inhaled causes death.

Reason (R) Carbon monoxide combines with hemoglobin. **[NIFT (PG) 2014]**

45. Assertion (A) Himalayas once laid under the sea.

Reason (R) Fossils of marine creatures are traced on the Himalayas.

46. Assertion (A) India is a secular country.

Reason (R) Indian people can practice any faith they like. **[MAT 2013]**

47. Assertion (A) Tamil Nadu gets most of the rainfall in winter.

Reason (R) Tamil Nadu gets rainfall from retreating monsoons. **[NIFT (PG) 2014]**

48. Assertion (A) Eskimos reside in igloos.

Reason (R) No other material except snow is available.

49. Assertion (A) Clothes are not washed properly in hard water.

Reason (R) Hard water contains many minerals. **[NIFT (PG) 2014]**

50. Assertion (A) The common value of all regligion should be taught to the children in our schools.

Reason (R) Yes, it will help inculcating moral values amongst the children of our country. **[MAT 2014]**

51. Assertion (A) Indira Gandhi was the Prime Minister of India for many years.

Reason (R) Indira Gandhi was the daughter of Jawaharlal Nehru. **[MAT 2014]**

52. Assertion (A) India is a 'sovereign' country.

Reason (R) Policies of India are decided by USA. **[MAT 2014]**

53. Assertion (A) Mahatma Gandhi is considered as 'Father of the nation' in India.

Reason (R) Mahatma Gandhi was the first Governor General of Independent India. **[MAT 2014]**

54. Assertion (A) 'DNA' Finger Printing has become an important test to establish paternity and identify of criminal of rape cases.

Reason (R) Small samples such as hair, dried blood and semen are adequate for DNA analysis. **[MAT 2014]**

55. Assertion (A) Interpersonal roles relate to a person's behaviour that focuses on interpersonal contact.

Reason (R) Such roles are derived directly from the authority and status.

56. Assertion (A) Seeds should be treated with fungicide before sowing.

Reason (R) Without treating with fungicides, the seeds do not germinate.

57. Assertion (A) Too much work causes stress.

Reason (R) It disturbs the body balance between its capacity and the demand. **[MAT 2012]**

58. Assertion (A) Good performance at work causes satisfaction.

Reason (R) Job satisfaction results in good performance. **[MAT 2012]**

59. Assertion (A) Social integration at workplace is necessary.

Reason (R) There are many backward classes in society. **[MAT 2012]**

60. Assertion (A) An apple a day keeps the doctor away.

Reason (R) Apple are very costly. **[MAT 2012]**

61. Assertion (A) India celebrates its Independence day on 15th August, 1947.

Reason (R) India become independent on 15th August 1947.

62. Assertion (A) In India 2nd October is observed as 'Martyr's Day'.

Reason (R) Pt Nehru was the first Prime Minister of India.

Directions (Q. Nos. 63-65) For the Assertion (A) and Reason (R) below, choose the correct alternative from the following.

Give answer

(a) if 'A' is true but 'R' is false
(b) if both 'A' and 'R' are true but 'R' is not the correct explanation of 'A'
(c) if both 'A' and 'R' are true and 'R' is the correct explanation of 'A'
(d) if 'A' is false but 'R' is true

63. Assertion (A) In the ordinary fire extinguisher, carbon dioxide is generated by the chemical reaction of sodium bicarboanae and dilute sulphuric acid.

Reason (R) Carbon dioxide can be used to extinguish fire. **[MAT 2011]**

64. Assertion (A) All machines suffer a loss of efficiency due to the frictional force acting on any moving member of that machine.

Reason (R) The frictional force can be reduced by providing a thin film of lubricant between any two mating parts. **[MAT 2011]**

65. Assertion (A) The escape velocity from the surface of the moon is less than that from the Earth's surface.

Reason (R) The Moon has no atmosphere. **[MAT 2011]**

Response & Interpretations (Master Exercise)

1. (*b*) As pressure decreases at higher altitudes, water boils much below 100°C, so that the food does not get sufficient heat for being cooked. Salt increases the boiling point of water.
2. (*c*) Inside the Earth, the high temperature and pressure keep the metals in molten state. The Earth does not absorb the Sun's rays but reflects them.
3. (*d*) India drafted its own constitution and formed its own government after gaining independence. Hence, A is false but R is true.
4. (*b*) Both A and R are true. Indian President is the constitutional or titular head of the executive, the real power being vested in the Council of Ministers.
5. (*a*) The carbon dioxide envelope in Earth's atmosphere traps the heat. With increase in the proportion of carbon dioxide, the global temperature would rise, thus causing the polar ice to melt.
6. (*a*) R explains A as Aurangzeb failed in his Deccan policy mainly due to political and religions intolerance.
7. (*d*) We prefer to wear dark clothes in winter as they absorb the heat and keep the body warm. However, white clothes are good reflectors of heat and are worn in summer.
8. (*b*) Land gets heated up quickly and also cools quicker than sea at night so that cool wind called the land breeze blows from land to sea.
9. (*a*) LPG contains ethyl merceptan which has strong smell. Because of this, smell leakages in household gas cylinders can be detected.
10. (*e*) We do not feel comfortable in hot and humid climate as in hot weather, body sweats more but this sweat does not evaporates easily because of high humidity.
11. (*e*) Filament of a bulb is made of tungsten as it can be drawn into very thin metal wires that have a high melting point.
12. (*a*) As compared to Delhi, Shimla is situated at a higher altitude and temperature decreases by 1°C for every 165 m of ascent.
13. (*c*) Air, upon heating, rises and so can be thrown out of a room through high ventilators. This is the reason why ventilators are provided near the roof.
14. (*a*) Uttar Pradesh is the leading sugarcane producer of India and this is the reason why this state is called 'Sugar Bowl' of India.

15. (*a*) R is complete explanation of A.
16. (*a*) Most Himalayan rivers are perennial as they are fed by melting snow throughout the year. Therefore, R is the correct explanation of A.
17. (*a*) 97% of Venus atmosphere comprises of carbon dioxide that traps the incoming solar energy very efficiently.
18. (*c*) Because of superior quality material being used, Ashoka pillars have retained their gloss on their surfaces. Hence, R is completely false.
19. (*c*) Pluto is the coldest planet, as Pluto being farthest from the Sun, hardly gets the Sun's rays.
20. (*d*) Being alkaline, backing soda neutralizes the acidity in the stomach.
21. (*b*) Graphite possesses a layer structure with two successive layers held by weak forces. Because of such weak forces these layers are able to slide over one another. Therefore, graphite is slippery and because of this property, it is used as lubricant.
22. (*a*) Water droplets act like prisms. Sun's rays falling on water droplets undergo dispersion, producing spectrum.
23. (*a*) R correctly explains A.
24. (*b*) Insects have developed immunity against DDT. This is the reason why DDT has lost its use as an insecticide. Further, it is very much true that DDT is harmful to man.
25. (*a*) Buddha left home after his marriage as he wished to free himself of all worldly ties to become an ascetic.
26. (*c*) Carbon dioxide reacts with lime water *i.e.,* calcium hydroxide to form milky precipitate of calcium carbonate.
27. (*a*) R correctly explains A.
28. (*c*) Soaking food materials in water for long time leads to loss of water soluble vitamin B and vitamin C.
29. (*c*) Ebonite is a bad conductor of heat. It does not heat up. This is the reason why handles of pressure cookers are made of ebonite.
30. (*b*) Earth has presence of water which is the sustainer of life on it.
31. (*c*) Leaves contain green pigment-chlorophyll. This is the reason behind their being green. Plants contain chromoplasts but they are not green pigments.
32. (*a*) R correctly explains A.
33. (*a*) R correctly explains A.
34. (*a*) Infact a vaccine contains the inactivated germs of the disease. But the AIDS virus changes its genetic code and no vaccine has been invented for so far.
35. (*e*) Because of high birth rate and negligence, females have lower life expectancy than males in India. Although a better diet is a requirement for females, they do not receive that.
36. (*a*) Unpolished rice should be eaten as the husk of unpolished rice contains vitamin B1, the deficiency of which causes the disease Beri-Beri.
37. (*a*) R is the correct explanation of A.
38. (*a*) R correctly explains A.
39. (*a*) Both A and R are true and R is the correct explanation of A.
40. (*b*) Both A and R are true but R is not the correct explanation of A.
41. (*c*) A is true but R is false. As in India, the judiciary is completely independent of the executive the government has no interference in the judicial affairs.
42. (*a*) Assertion is true, and this happens because a salt water fish is hypertonic to its environment while a fresh water fish is not hypertonic to its environment.
43. (*c*) River Narmada flows westward and drains into the Arabian sea.
44. (*a*) Both A and R are true and R is the correct explanation of A. As, carbon monoxide combines with the hemoglobin when it is inhaled, if forms carboxy hemoglobin compound which inhibits the transport of oxygen.
45. (*a*) Himalayas are the young fold mountains which at one time are believed to lie inside the Tethys sea. This is evident from the recovery of fossils of marine creatures on its peak.
46. (*a*) Both A and R are true and R is the correct explanation of A. Since India is a secular country, people of India can practice any faith they like.
47. (*a*) Both A and R are true and R is the correct explanation of A as, rainfall in Tamil Nadu is caused by the retreating which occurs in winter.
48. (*c*) Eskimos live in snow houses called igloos as such houses are warm inside.
49. (*b*) Both A and R are true but R is not the correct explanation of A. Clothes are not washed properly in hard water because it does not form lather with soap. However, it is true that hard water contains many minerals.
50. (*a*) Both A and R are true and R is the correct explanation of A.
51. (*b*) Both A and R are true but R is not the correct explanation of A.
52. (*c*) A is true and R is false. As, India is a 'sovereign' country, policies of India are not decided by USA.
53. (*c*) A is true and R is false. As, Mahatma Gandhi is considered as 'Father of the nation' in India but he was not the first Governor Gernal of independent India.
54. (*a*) Both A and R are true and R explains of A.
55. (*c*) A is true, but R is false.
56. (*a*) Both A and R are true and R correctly explains A.
57. (*a*) Too much work causes stress because it disturbs the body balance between its capacity and the demand. Hence, both A and R are true and R is the correct explanation of A.
58. (*c*) 'Good performance at work causes satisfaction' is definitely true but it cannot be determined whether job satisfaction results in good performance or not. Hence, A is true but R is false.
59. (*b*) 'Social integration at workplace is necessary' is definitely true but the reason given is not a correct explanation for this social integration. Hence, both A and R are true but R is not the correct explanation of A.
60. (*c*) 'An apple a day keeps the doctor away' is definitely true but the statement R may or may not be true. Hence, A is true but R is false.
61. (*a*) India became independent on 15th August 1947, so it celebrates independence day on 15th August.
62. (*d*) A is false but R is true.
63. (*c*) Both A and R are true and R is the correct explanation of A.
64. (*b*) Both A and R are true but R is not the correct explanation of A.
65. (*b*) Both A and R are true but R is not the correct explanation of A.

7

Cause and **Effects**

Cause is the logical or scientific reason of an event that has occured and Effects to this cause are the consequences of that event.

Different types of questions covered in this chapter are as follows

- Statement and Direction Based Questions
- Direct Cause and Effect Based Questions

The necessary condition for an event to occur is a cause which supplements an event to occur.

For a cause to be valid it must be either sufficient or necessary.

1. **Necessary Condition** for an event to take place is that condition without which the event will not occur.
2. **Sufficient Condition** for an event to take place is that condition under whose presence event must occur.

e.g., For life to exist on earth we require (a) air (b) water (c) food.

Condition (a), (b) and (c) together makes sufficient conditions for life to exist on earth but individually they are necessary condition for life to exist on earth.

Therefore, we can say that there may be more than one necessary conditions for the occurrence of an event and all those necessary conditions must be included in the sufficient conditions.

Different Types of Causes

Immediate Cause	It immediately precedes the effect. In other words immediate causes are the most proximate in time, to the effect.
Principal Cause	It is the most important reason behind the effect.
Common Cause	Two effects given in two statements may be caused by a third unmentioned event which may be called the common cause of the given events.

Difference between Principal Cause and Immediate Cause

Principal and immediate cause sound similar but there is a difference between principal and immediate cause. The principal cause is the main and most important reason for the effect, while immediate cause is the most proximate in time to the effect.

Mainly two types of questions are asked from Cause and Effects, which are discussed as under

Type 1 Statement and Direction Based Questions

In this type of questions, two statements are given and the student has to identify whether they are independent causes or effects of independents causes or a common cause etc., and accordingly have to select the answer options.

Following examples will give a better understanding about the types of questions asked

Directions (Example Nos. 1-3) Below in the questions are given two statements A and B. These statements may be either independent causes or may be effects of independent causes or a common cause. One of these statements may be the effect of the other statement. Read both the statements and decide which of the following answer choices correctly depicts the relationship between these two statements.

Give answer

(a) if Statement A is the cause and Statement B is the effect
(b) if Statement B is the cause and Statement A is the effect
(c) if both the Statements A and B are independent causes
(d) if both the Statements A and B are effects of independent causes
(e) if both the Statements A and B are effects of common cause

Ex 1 A. Police resorted to lathi charge to disperse the unlawful gathering of large number of people.
B. The citizen's forum called a general strike in protest against the police atrocities.

Sol. (*a*) Clearly, the people's mass protest against the police might have instigated the latter to indulge in lathi charge to disperse the people. Hence, A is the cause and B is its effect. Thus, option (a) is the correct.

Ex 2 A. There is increase in water level of all water tanks supplying drinking water to the city during the last fort night.
B. Most of the trains were cancelled last week due to water logging on the tracks.

Sol. (*e*) The problems discussed in both the statements are clearly the result of heavy rain in the area. Hence, A and B both are effects of common cause. Therefore, option (e) is correct.

Ex 3 A. Earnings of all the government employees have gone up with the revision of pay scales.
B. Salaries of employees in the private companies are being revised from time to time. **[MHA-CET 2009]**

Sol. (*e*) Both the Statements A and B are effect of some common causes.

Directions (Example Nos. 4-5) In each of these questions, two Statements I and II are given. These may have a cause and effect relationship or may have independent causes or be the effects of independent causes. **[MAT 2013]**

Give answer

(a) if Statement I is the causes and Statement II is its effect
(b) if Statement II is the cause and Statement I is its effect
(c) if both Statements I and II are effects of independent causes
(d) if both Statements I and II are effects of some common cause

Ex 4 I. The prices of petroleum products dropped marginally last week.
II. The State Government reduced the tax on petroleum products last week.

Sol. (*b*) State Government reduced the tax on petroleum products last week, that is why the price of petroleum products dropped marginally, so Statement II is the cause and Statement I is the effect.

Ex 5 I. Many people visited the religious place during the weekend.
II. Few people visited the religious place during the week days.

Sol. (*c*) Both statements are effects of independent causes.

Practice Corner **7.1**

Build your Confidence...

Directions (Q. Nos. 1-30) Below in each question are given two Statements A and B. These statements may be either independent causes or may be effects of independent causes or of a common cause. One of these statements may be the effect of the other statement. Read both the statements and decide which of the following answer choices correctly depicts the relationship between these two statements.

Give answer

(a) if Statement A is the cause and Statement B is its effect
(b) if Statement B is the cause and Statement A is its effect
(c) if both statements are independent causes
(d) if both statements are effects of independent causes
(e) if both statements are effects of some common cause

1. A. Ahmed is a healthy boy.
B. His mother is very particular about the food he eats.

2. A. Ravi died while on the way to the hospital.
B. A car dashed into the motorcycle Ravi was driving.

3. A. The average day temperature of the city has increased by about 2 degrees in the current year over the average of past ten years.
B. More people living in rural areas of the state have started migrating to the urban areas in comparison with the earlier year. **[SBI (PO) 2010]**

4. A. Most of the shopkeepers in the locality closed their shops for the second continuous day.
B. Two groups of people living in the locality have been fighting with each other with bricks and stones, forcing people to stay indoors. **[SBI (PO) 2010]**

5. A. The Government has decided to increase the prices of LPG cylinders with immediate effect.
B. The Government has decided to increase the prices of Kerosine with immediate effect. **[BOI (PO) 2010]**

6. A. Party 'X' won clear majority in the recently held state assembly elections.
B. Of late, there was unrest in public and also among the members of the ruling party of the state. **[BOI (PO) 2007]**

7. A. Staff members of the university decided to go on strike in protest during the examinations.
B. The university administration made all the arrangements for smooth conduct of examination with the help of outsiders. **[BOI (PO) 2007]**

8. A. In the university examination, overall performance of students from college 'X' was better than that of students from college 'Y'.
B. Majority of the students depend upon coaching classes for university examinations. **[SBI (PO) 2007]**

9. A. The Government of state 'X' decided to ban working of women in night shifts and also in late evening hours.
B. The percentage of working women has a significant rise in the last one decade. **[SBI (PO) 2007]**

10. A. Frequent robberies in jewellery shops were recorded in distant suburbs of the city.
B. Shop owners in the city and suburbs demanded improvement in security situation from the police authorities. **[SBI (PO) 2007]**

11. A. The staff of airport authorities called off the strike they were observing in protest against privatisation.
B. The staff of airport authorities went on strike, anticipating a threat to their jobs.

12. A. The university authority has decided to conduct all terminal examinations in March/April every year to enable them to declare results in time.
B. There has been considerable delay in declaring results in the past due to shortage of teachers evaluating the answer sheets of the examination conducted by the university.

13. A. Government has decided to distribute part of the foodgrain stock through Public Distribution System to people below poverty line.
B. There has been bumper kharif crop for the last two seasons. **[Andhra Bank (Clerk) 2009]**

14. A. Most of the students enrolled themselves for the educational tour scheduled for next month.
B. The school authority cancelled the educational tour scheduled for next month. **[Andhra Bank (Clerk) 2009]**

15. A. The prices of fruits have dropped substantially during the last few days.
B. The prices of foodgrains have increased substantially during the last few days. **[Andhra Bank (PO) 2009]**

16. A. The road traffic between the two towns in the state has been disrupted since last week.
B. The rail traffic between the two towns in the state has been disrupted since last week. **[Andhra Bank (PO) 2009]**

17. A. Heavy showers are expected in the city area during the next fortyeight hours.

B. The inter-club cricket tournament scheduled for the week was called off. **[Andhra Bank (PO) 2009]**

18. A. The prices of vegetables have been increased considerably during the summer.

B. There is tremendous increase in the temperature during this summer there by damaging crops greatly.

19. A. The private medical colleges have increased the tution fees in the current year by 200% over the last year's fee to meet the expenses.

B. The Government medical colleges have not increased their fees inspite of price evaluation.

20. A. The police authority has recently caught a group of house breakers.

B. The citizens group in the locality have started night vigil in the area.

21. A. Huge tidal waves wrecked the vast coastline early in the morning killing thousands of people.

B. Large number of people gathered along the coastline to enjoy the spectacular view of sunrise.

[PNB (PO) 2008]

22. A. The Government has suspended several police officers in the city.

B. Five persons carrying huge quantity of illicit liquor were apprehended by police. **[PNB (PO) 2008]**

23. A. The traffic police removed the signal post at the intersection of two roads in a quiet locality.

B. There have been many accidents at the intersection involving vehicles moving at high speed.

[PNB (PO) 2008]

24. A. The local steel company has taken over the task of development and maintenance of the civic roads in the town.

B. The local civic body requested the corporate bodies to help them maintain the civic facilities.

[PNB (PO) 2008]

25. A. Majority of the students in the college expressed their opinion against the college authority's decision to break away from the university and become autonomous.

B. The university authority has expressed its inability to provide grants to its constituent colleges.

[PNB (PO) 2008]

26. A. Worldwide recession has created uncertainity in job market.

B. Many people are opting for change from private sector to public sector. **[MHA-CET 2009]**

27. A. A large number of employees could not report to the duty on time.

B. Police had laid down barricades on the road to trap the miscreants. **[MHA-CET 2009]**

28. A. There was a huge crowd of buyers at various shopping outlets in the city.

B. Prices of most of the commodities have gone up substantially in the recent past. **[MHA-CET 2009]**

29. A. There has been constant rise in the number of immigrants to the metropolis for last many years.

B. The infrastructure of the metropolis is struggling to take care of its increasing population. **[MHA-CET 2009]**

30. A. This year, the Government has decided to procure foodgrains earlier than the stipulated date.

B. This year, the farmers have decided to sell their crops to private traders. **[IRMA 2006]**

Directions (Q. Nos. 31-34) In each of these questions, two Statements I and II are given. These may have a cause and effect relationship or may have independent causes or be the effects of independent cause. **[MAT 2013]**

Give answer

(a) if Statement I is the cause and Statement II is its effect
(b) if Statement II is the cause and Statement I is its effect
(c) if both Statements I and II are effects of independent causes
(d) if both Statements I and II are effects of some common cause

31. I. Large number of people living in the low-lying areas have been evacuated during the last few days to safer places.

II. The Government has rushed in relief supplies to the people living in the affected areas.

32. I. International Agency for Research on Cancer (IARC) —an arm of the World Health Organisation (WHO)—will meet in France to take a call on bitumen, the black, oily material used to make roads to be banned as probably carcenogenic, *i.e.*, causing cancer to humans.

II. IARC has asked experts from across the globe to submit data from their research studies conducted on bitumen so as to help it to come to some conclusion.

33. I. In a survey conducted recently in America, almost 70% of Americans said they find it easier to care for their cars than their personal health. 40% of them said they would be more likely to address their issues with their car than their health .

II. Base on the above survey, the national campaign network for men's health launched this awareness through Abbott Laboratories to encourage men to visit their doctors more often to enjoy better health.

34. I. The local cooperative credit society has decided to stop giving loans to farmers with immediate effect.

II. A large number of credit society members have withdrawn major parts of their deposits from the credit society.

Response & Interpretations **(7.1)**

1. (*b*) Since, Ahmed's mother take care of what he eats, Ahmed has a good health.

2. (*b*) Ravi died because of the accident.

3. (*d*) The two statements seem to have contrary causes.

4. (*b*) The fighting has led to the closure of the shops.

5. (*e*) It seems the price of Petroleum has increased in general. Alternatively, subsidies may have been reduced, again a cause common to both the statements.

6. (*e*) It can be safely assumed that party 'X' was earlier in the opposition and has benefitted from anti-incumbancy. But A and B are consequences of a common cause, *i.e.,* bad governance by the ruling party.

7. (*a*) Since, the staff members have gone on strike, the help of outsiders has been sought.

8. (*d*) A seems to have happened as X is a better college. B seems to be the result of the falling standard of teaching in colleges.

9. (*d*) A might have happened because harassment of woman is on the rise while B seems to be the result of a change in gender role perception.

10. (*a*) The robberies have led to a demand of improvement in security situation.

11. (*d*) Clearly, calling of the strike and going on strike are events that may not be backed by the same cause. Therefore, they must have been effects triggered by separate independent causes.

12. (*c*) Clearly, each statement is self-sufficient in itself and stands independent of the other.

13. (*b*) The bumper crop has led to the largesse shown by the Government.

14. (*c*) A happened so that students could see more of the world. B happened so that the school may attend to other important task.

15. (*d*) A has happened because of increased supply of fruits. B has happened because of decreased supply of foodgrains.

16. (*e*) A and B both seem to have a common cause, agitation on a large scale.

17. (*a*) The fear of rain has led to the tournament being called off.

18. (*b*) Clearly, damage to crops due to high temperature may have resulted in a short supply of vegetables and an increase in their prices.

19. (*c*) The increase in the fees of the private colleges and there being no increase in the same in Government colleges seem to be policy matters undertaken by the individual decisive boards at the two levels.

20. (*e*) Both the statements A and B are clearly backed by a common cause, which is clearly an increase in the number of thefts in the locality.

21. (*e*) It appears some special cosmic phenomenon has led to both A and B.

22. (*d*) A certainly cannot be the effect of B, if we believe in an ethical world. A is the effect of bad policing and B of good policing.

23. (*a*) The removal of the signal post has led to the accident.

24. (*b*) A has been done in response to B.

25. (*c*) It is obvious from given statements that both are independent causes of action.

26. (*a*) Many people are opting for change from private sector to public sector because worldwide recession has created uncertainly in the job market. It is considered that public sector jobs are more certain than the private sector jobs. So, Statements A is the cause while Statements B is the effect.

27. (*b*) A large number of employees could not report to the duty on time because police had laid down barricades on the road to drop the miscreants. So, Statement B is the cause while Statement A is its effect.

28. (*d*) Both Statements A and B are effects of independent causes.

29. (*a*) Clearly, A is the cause and B is the effect.

30. (*b*) Government has decided to procure foodgrain earlier than the stipulated data because farmers are planning to sell their crops to private traders. So, Statement B is the cause and Statement A is its effect.

31. (*d*) Both statements are effects of some common cause as these are measures taken by Government.

32. (*d*) Since, both Statements I and II are effects of some common cause *i.e.,* bitumen causing cancer to humans.

33. (*a*) Here, Statement I is the cause and Statement II is its effect *i.e.,* after the survey is conducted, then based on that survey, national campaign network for men's health launched its awareness.

34. (*b*) Here, Statement II is the cause and Statement I is its effect *i.e.,* since a large number of members have withdrawn major amount of deposits from the credit society, so the credit society has decided to stop giving loans to farmers with immediate effect.

Type 2 Direct Cause and Effect Based Questions

In such type of questions, a cause (effect) is given followed by 4 or 5 options. The student has to choose the correct effect (cause) from the options which suits the given statement most.

Given examples will help understand such type of questions better

***Ex* 6** **Cause** Two wings of a building complex in a residential area collapsed.
Which of the following is the possible effect of the cause mentioned above?

I. Most of the flats of such residential wings were vacant from long time.
II. A flat owner got done some major repairing works and in this process a main part got collapsed.
III. Residents of the other wings in the complex were said to vacate their flats immediately.

(a) Only I (b) Only II (c) Only III (d) Both II and III (e) None of these

Sol. (c) Because of the collapse of certain wings, the residents of other wings may be said to vacate their flats, so that the residents of other wings could be safe from possible danger. Hence, option (c) is correct.

***Ex* 7** **Effect** Cost of Petroleum products has been increased almost 20% in last two months.
Which of the following may be the possible cause of the effect mentioned above?

(a) The cost of vegetables and other food items has been increased by more than 30%
(b) Union of truck owners has decided to increase carriage about 20% with immediate effect
(c) In last couple of weeks, the cost of crude oil in the international market has been increased immensely
(d) People have decided to protest against the inertia of government towards essential commodities
(e) None of the above

Sol. (c) It is the obvious reason for the given effect.

***Ex* 8** **Effect** The prices of food grains and vegetables have increased by about 30% in the past three months.
Which of the folllowing can be a probable cause of the above effect? **[CG PSC 2013]**

(a) The farmers have decided to change their farming style
(b) The prices of other products have increased more than 30%
(c) The number of farmers has reduced
(d) Occupation of farming has not been viewed as a reputed work
(e) None of the above

Sol. (*b*) The prices of foodgrains and vegetables have increased by about 30% due to increase of more than 30% in the price of other products, because farmers will need 30% more funding for purchasing other products.

Practice Corner 7.2

Build your Confidence...

1. **Cause** The Government has recently increased its takes on Petrol and diesel by about 10%.
Which of the following can be a possible effect of the above cause? **[CBI (PO) 2010]**

(a) The Petroleum companies will reduce the prices of petrol and diesel by about 10%
(b) The Petroleum companies will increase the price of petrol and diesel by about 10%
(c) The Petroleum companies will increase the prices of petrol and diesel by about 5%
(d) The petrol pumps will stop selling petrol and diesel till the taxes are rolled back by the Government
(e) None of the above

2. **Effect** Majority of the employees of the ailing organisation opted for voluntary retirement scheme and left the organisation with all their retirement benefits within a fortnight of launching the scheme.
Which of the following can be a probable cause of the above effect? **[IOB (PO) 2010]**

(a) The company has been making huge losses for the past 5 yr and is unable to pay salary to its employees in time
(b) The management of the company made huge personal gains through unlawful activities
(c) One of the competitons of the company went bankrupt last year
(d) The company owns large tracts of land in the state which will fetch huge sum of its owners
(e) None of the above

3. Effect Atleast 20 school children were seriously injured while going for a school picnic during the weekend.

Which of the following can be a probable cause of the above effect? **[RBI (Grade 'B') 2009]**

(a) The teacher accompanying the school children fell ill during the journey

(b) The bus in which the children were travelling met with an accident while taking turn on the main highway

(c) The driver of the bus in which the children were travelling did not report after the break at the halting place on their journey

(d) The school authority banned all school picnics for the next six months with immediate effect

(e) None of the above

4. Cause Government has recently decided to hike the procurement price of paddy for the rabi crops.

Which of the following will be a possible effect of the above cause? **[RBI (Grade 'B') 2009]**

(a) The farmers may be encouraged to cultivate paddy for the rabi season

(b) The farmers may switch over to other cash crops in their paddy fields

(c) There was a drop in production of paddy during Kharif season

(d) Government may not increase the procurement price of paddy during the next Kharif season

(e) Government will buy paddy from the open market during the next few months

5. Cause A severe cyclonic storm swept away most part of the state during the last two days.

Which of the following cannot be a possible effect of the above cause? **[PNB (PO) 2009]**

(a) Heavy rainfall was reported in most part of the state during the last two days

(b) Many people were rendered homeless as their houses were flown away

(c) The communication system of the state was severely affected and continues to be out of gear

(d) Government has ordered that all the offices and schools should be kept open

(e) All above are possible effects

6. Cause It has been reported by some important news papers that current year monsoon can be lower than desired level as in so many part of the country it is not raining as it is required.

Which of the following can be a possible effect of above mentioned situation? **[UBI (PO) 2011]**

(a) People from less rain affected area can be displaced towards urban area

(b) Government can help the farmers of these areas with money package

(c) Government can declare these areas as drought regions

(d) People can blame Government for this situation and they can protest for not getting sufficient water for agriculture

(e) None of the above

7. Effect It has been reported in recent years that so many seats remain vacant in the engineering colleges of the country, at the end of admission session.

Which of the following can be possible cause for the effect mentioned above? **[IBPS (PO) 2011]**

(a) Because of the bad state of economy in the recent years, there has been dearth of jobs for engineering graduates

(b) Students have always given a priority to 3 yr engineering course in stead of 4 yr

(c) Government has decided to give professional training to all qualified engineering graduates on Government expenditure

(d) The success rate of engineering graduates has always been very poor

8. Cause To make available banking services to all citizens Government has decided to give directions to banks for opening of new branches so that one branch of any bank must be available for villages having population 1000 or more or for group of villages having population less than 1000.

Which of the following can be the possible effect of the cause mentioned above?

(a) All the banks will follow the directives of Government

(b) No bank will follow the directives of the Government

(c) Banks will incur great loss

(d) Only public sector banks will follow the directives of the Government

9. Effect Most of the final year students of the management institution have opted specialisation in finance.

Which of the following can be a possible cause of the effect mentioned above?

(a) Last year, students with other specialisation got better proposals for jobs than those specialised in HR

(b) Management institution gives specialisation in finance only to the final year students

(c) Last year, students with specialisation in finance got most of the beneficial proposals in comparison to those specialised in marketing or HR

(d) Management institution apart from already giving specialisation in marketing and HR, has afflate started specialisation in finance

(e) None of the above

10. **Effect** During the last six months the sale of four wheelers has come down in comparison to the sale of four wheelers last year for the same period.

Which of the following can be the possible cause for the effect mentioned above?

I. Government has increased the excise duty on the four wheelers from the beginning of this year.
II. Cost of petrol has increased immensely during the last eight months.
III. Interest rates on car and home loans has been increasing from last seven months. **[IBPS (PO) 2011]**

(a) I, II and III
(b) Both I and II
(c) Both II and III
(d) Only II
(e) Only I

11. **Cause** School authority has increased the tution fee excessively from the current academic session.

Which of the following can be possible effect of the cause mentioned above?

I. Parents of the students of this school will get their child admitted in other schools.
II. No new student will get admission in this academic session.
III. Parents of the students of this school will contact the school authority for the roll back of the increased fee.

(a) None (b) Only II
(c) Only III (d) Only I
(e) Both II and III

12. **Cause** There has been incessant rain during the last 48 h.

Which of the following can be a possible effect for the cause mentioned above?

I. Transport system of the city has completely failed from last 48 h.
II. There is flood like situation in most down town areas of the city.
III. So many slum dwellers have been shifted to municipal schools.

(a) Both I and II (b) Both II and III
(c) Both I and III (d) I, II and III

Response & Interpretations **(7.2)**

1. (*e*) Companies may hike the price to cover the loss because of the increased tax. But increase in price is totally the matter of company, we cannot make any guesses about it.

2. (*a*) It should be the obvious cause for the given effect.

3. (*b*) We often hear of accidents leading to such injuries.

4. (*a*) The decision of hiking the procurement price of a crop may encourage the farmers to cultivate it.

5. (*d*) In such a catalcysmic scenario, the Government is likely to order the closure of offices and schools.

6. (*c*) Option (b) is also possible but its possibility can only be after declaring the areas as drought regions.

7. (*a*) It is the obvious possible cause.

8. (*a*) Government's directive is followed on priority basis.

9. (*c*) It is the obvious possible cause.

10. (*a*) All may be the possible causes.

11. (*c*) Only III can be the possible effect.

12. (*d*) I, II and III, all the three can be the possible effects.

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-15) Below in each question are given two Statements A and B. These statements may be effects of independent causes or may be effects of a common cause. One of these statements may be the effect of the other statement. Read both the statements and decide which of the following answer choices correctly depicts the relationship between these two statements.

Give answer

(a) if Statement A is the cause and Statement B is its effect
(b) if Statement B is the cause and Statement A is its effect
(c) if both statements are independent causes
(d) if both statements are effects of independent causes
(e) if both statements are effects of some common cause

1. A. The farmers have decided against selling their Kharif crops to the Government agencies.

B. The Government has reduced the procurement-price of Kharif crops starting from last month to the next six months.

2. A. The Reserve Bank of India has recently put restrictions on few small banks in the country.

B. The small banks in the private and cooperative sector in India are not in a position to withstand the competitions of the bigger in the public sector.

3. A. The Government has marginally increased the procurement price of wheat for the current crop.

B. The current wheat crop is expected to be 20% more than the previous wheat crop.

[Andhra Bank (PO) 2010]

4. A. The braking system of the tourist bus carrying 40 passengers failed while negotiating a stiff climb on a hilly road.

B. The tourist bus fell into the gorge killing at least ten passengers and seriously injuring all the remaining. **[Andhra Bank (PO) 2010]**

5. A. The state Government has decided to boost English language education in all the schools from the next academic year.

B. The level of English language of the school students of the State is comparatively lower than that of the neighbouring states. **[PNB (PO) 2010]**

6. A. The municipal authority demolished the tea stall located on the footpath on the busy road.

B. A large number of people have been taking their evening tea at the tea stall located on the footpath on the main road, blocking pedestrian movement.

[PNB (PO) 2010]

7. A. Majority of the students left the local school as the school building was in a dilapidated condition.

B. The school authority decided to close down the school immediately and shift the remaining students to a make shift school.

8. A. There has been mass recruitment of IT professionals by Indian IT companies.

B. Many developed countries are increasingly outsourcing IT related functions to India and China. **[UBI (PO) 2009]**

9. A. Many farmers have given up jute cultivation as it is no longer economically viable.

B. The textile ministry has proposed a hike in the Minimum Support Price of jute. **[UBI (PO) 2009]**

10. A. The Government is considering changes in the Land Acquisition Act.

B. Several large infrastructure development projects have been stalled due to unavailability of land.

[UBI (PO) 2009]

11. A. The Government is considering the possibility of involving private sector companies in highway construction projects.

B. The implementation of many highway projects undertaken by Government agencies is behind schedule in various states.

[Punjab & Sindh Bank(PO) 2009]

12. A. The price of aircraft fuel has risen during the past few months.

B. Many passenger airlines in India have been forced to cut their air fares by about 10%.

[Punjab & Sindh Bank (PO) 2009]

13. A. There is sharp decline in the production of oil seeds this year.
B. The Government has decided to increase the import quantum of edible oil. **[MAT 2014]**

14. A. The life today is too fast, demanding and full of variety in all aspects which at times leads to stressful situation.
B. Number of suicide cases among teenagers is on increase.

15. A. The bank has provided a link on its website to obtain feedback from customers.
B. Customers have been complaining about poor services in the bank's branches. **[Punjab & Sindh Bank (PO) 2009]**

Directions (Q. Nos. 16-17) In each of these questions, two Statements I and II are provided. These may have a cause and effect relationship or may have some common cause or be the effects of independent causes.

Give answer

(a) if Statement I is the cause and Statement II is the effect
(b) if Statement II is the cause and Statement I is its effect
(c) if both statements are effects of independent causes
(d) if both statements are effects of some common cause

16. Statement I The Government has decided to make all the information related to primary education available to the general public.

Statement II In the past, the general public did not have access to all this information related to primary education.

17. Statement I There have been heavy rains in the catchment area of the lakes supplying drinking water to the city.

Statement II The municipal authorities have suspended the proposed cut in water supply to the city.

Directions (Q. Nos. 18-20) In each of the following questions two statements are given. They may or may not be cause and effect relationship between the two statements. **[NIFT (PG) 2012]**

Give answer

(a) if Statement I is the cause and Statement II is its effect
(b) if Statement II is the cause and Statement I is its effect
(c) if Both the Statements are independent causes
(d) if Both the Statements are independent effects

18. Statement I School education has been made free for children of poor families.

Statement II Literacy rate among poor is steadily growing.

19. Statement I Hallmarking of gold jewellery has been made compulsory.

Statement II Many persons do not prefer to buy hall marked jewellery.

20. Statement I Many vegetarians are suffering stomach ailments.

Statement II Many dead fish were found near the lake shor.

21. Statement Most part of the boundary walls of the local school collapsed completely last night.

Which of the following can be a possible consequence of the facts stated in the above statement? **[OBC (PO) 2010]**

I. The local school authority will close down the school till the boundary walls are erected.
II. The Government will levy penalty to the school management for their negligence.
III. The management of the school will erect temporary fences till the boundary walls are erected.

(a) Only I (b) Only II
(c) Only III (d) Both I and III
(e) None of these

22. Statement The prices of foodgrains and other essential commodities have decreased for the second consecutive week.

Which of the following can be possible consequence of the facts stated in the above statement? **[OBC (PO) 2010]**

I. The consumer price index will come down considerably.
II. People will increases their purchase of quantity of essential commodities and foodgrains.
III. Government will increase its taxes on essential commodities and foodgrains.

(a) Both I and II (b) Both II and III
(c) Both I and III (d) All I, II and III
(e) None of these

23. Statement Many students were caught while using unfair means during the final examinations by the special team of the university.

Which of the following can be a possible consequence of the facts stated in the above statement? **[OBC (PO) 2010]**

I. The teacher responsible for invigilation in all such examination halls in where the students were caught are to be suspended from their services.

II. All those students who were caught while using unfair means are to be debarred from appearing in these examinations for a year.

III. The college should be blacklisted by the university for holding final examinations atleast for a year.

(a) Only I
(b) Only II
(c) Only III
(d) Both II and III
(e) None of these

24. Cause All the major rivers in the state have been flowing way over the danger level for the past few weeks.

Which of the following is/are possible effect(s) of the above cause? **[Canara Bank (PO) 2007]**

I. Many villages situated near the riverbanks are submerged, forcing the residents to flee.

II. Government has decided to provide alternate shelter to all the affected villagers residing near the river banks.

III. The entire state has been put on high flood alert.

(a) Only I
(b) Both I and II
(c) Both II and III
(d) All I, II and III
(e) None of the above

25. Effect Government has allowed all the airlines to charge additional amount as peak time congestion charges for the flights landing between 6 : 00 a m and 10 : 00 am.

Which of the following is a probable cause of the above effect? **[Canara Bank (PO) 2007]**

(a) All the airline companies had threatened to suspend their services during peak hours
(b) The Government has increased its tax for peak time flights
(c) The aircrafts are routinely put on hold over the airports while landing during peak time, causing extra fuel consumption
(d) The airline companies can now charge unlimited additional charge for peak time flights
(e) None of the above

Directions (Q. Nos. 26-33) In each question, two Statements A and B are provided. These may have a cause and effect relationship or may have independent causes.

Give answer

(a) if the Statement A is the cause and Statement B is its effect
(b) if the Statement B is the cause and Statements A is its effect
(c) if both statements are effects of independent causes
(d) if both statements are effects of some common cause

26. Statement A Sri Lankan skipper Kumar Sangakara justified his decision to step down from the captaincy of the ODI and T20 teams by saying, 'I will be 37 by the next World Cup and I can't be sure of my place in the team. It is better that Sri Lanka is now led by a player who will be at the peak of his career during that tournament'

Statement B Remarkably, unlike most skippers whose individual performance drops after assuming the leadership role, Sangakara has actually batted better as captain in all three formats of the game. **[MAT 2012]**

27. Statement A India is ranked fifth most powerful country in the world, next to US, China, Russia and Japan, in the hierarchy of top 50 nations, identified on the basis of their GDP, as per national security index.

Statement B The assessment is based on defence capability, economic strength, effective population, technological capability and energy security of top 50 countries. **[MAT 2012]**

28. Statement A The prices of 'silver' have gone up from ₹ 27000 per kg to ₹ 50000 per kg in almost a year's time.

Statement B Indian jewellers are receiving a lot of demand for the silver ornaments from American and European clients. **[MAT 2012]**

29. Statement A There is an alarming increase in the number of young unemployed MBA's this year in comparison to the last year's figures.

Statement B Nearly one lakh applications were received against a recruitment call given by a private bank for only ten vacant posts. **[MAT 2012]**

30. Statement A Many people visits the religious places on week days and weekends to pray to Mother Durga in Navratras.

Statement B Many religious people go on fasting during Navratras to seek the blessings of Mother Durga. **[MAT 2012]**

31. **Statement A** A mobile phone, if kept on during an air flight, can actualy disrupt the plane's electronic systems and eventually lead to a crash, a study has revealed. Older planes are most at risk to mobiles, laptop and i-pads.

Statement B One case involved a Boeing 747 flying at a height of 4500 ft whose pilot disengaged by itsef. When the flight attendants went through the cabin, they found four passenger using their cell phones. Once these were switched off, the flight carried on without any problem.

32. **Statement A** Indian women don't believe in donating blood. According to the first ever data bank on gender distribution of blood donors, India has only 6% blood donations by women. The rest 94% were male donors.

Statement B Just twenty five countries in the world collect more than 40% of their blood supplies from female donors, these include Australia, US, Thailand, Switzerland, Portugal, New Zealand, Mongolia, Zimbabwe, etc.

33. **Statement A** Six months after Glaxo Smith Kline (GSK) consumer healthcare India brought in its global oral care brand Sensodyne to the Indian market, Sensodyne has garnered a 10% share of the sensitive toothpaste market.

Statement B GSK has not only invested heavily in the advertising and promotion of the brand but has contacted 15000 dentists in two months and is keen on building on the Sensodyne equity.

Response & Interpretations (Master Exercise)

1. (*b*) The reduction in procurement price of crops must have instigated the farmers not to sell their produce to Government agencies.

2. (*b*) The inability of the small banks to compete with the bigger ones shall not ensure security and good service to the customers, which is an essential concomitant that has to be looked into by the RBI. It seems to be a remedial step for the same.

3. (*a*) The Government initiative has led to greater wheat cultivation.

4. (*a*) Brake failure led to the accident.

5. (*b*) Since the level is lower, the Government has decided to boost English language education.

6. (*b*) Since pendestrian movement was getting blocked, the authority demolished the tea stall.

7. (*e*) Dilapidated condition of the school is the common cause.

8. (*b*) The outsourcing has led to creation of jobs in IT in India.

9. (*a*) Seeing the farmers getting discouraged, the Government has taken this step.

10. (*b*) Since the projects have been stalled, the Government is considering an amendment.

11. (*b*) The inability of Government has led it to explore the private sector.

12. (*d*) A is usually the effect of hike in global petroleum prices. B is usually the effect of competition in aviation.

13. (*a*) A sharp decline in oil seed production is bound to reduce oil supply and import of oil is the only means to restore the essential supply.

14. (*d*) Both statements are effects of independent causes.

15. (*b*) The surge in complaints has led the banks to receive them in an electronic mode.

16. (*d*) Both the Statements I and II are effects of some common cause.

17. (*a*) Statement I is the cause and Statements II is its effect.

18. (*a*) Statement II is the effect of Statement I.

19. (*b*) Since many people have reservations about buying hallmarked jewellery, therefore it has been made compulsory.

20. (*d*) Statement I and Statement II are not related to each other and seem to be effects of different causes.

21. (*c*) It can be a possible consequence.

22. (*a*) I and II can be possible consequences.

23. (*d*) II and III can be possible consequence.

24. (*d*) All I, II and III are possible effects.

25. (*c*) Extra fuel consumption is a probable cause of the given effect.

26. (*c*) Both statements are effects of independent causes.

27. (*b*) Statement B is the cause and Statement A is its effect because India's rank as the fifth most powerful county is based on its defence capability, economic strength, effective population, technological capability and energy security among top 50 countries.

28. (*c*) The prices of 'silver' going up from ₹ 27000 per kg to over ₹ 50000 per kg and Indian jewellers receiving a lot of demand for the silver ornaments from American and European clients are effects of independent causes.

29. (*a*) Statement A is the cause and Statement B is its effect.

30. (*d*) 'Blessing of Mother Durga' is a common cause between two statements. Hence, both the statements are effects of some common cause.

31. (*a*) Statement A is the cause and Statement B is its effect.

32. (*c*) Both statements are effects of an independent cause.

33. (*d*) Both statements are effects of some common cause.

8

Syllogism

Syllogism is a 'Greek' word that means inference or deduction. As such inferences are based on logic, then these inferences are called logical deduction. These deductions are based on propositions (premise).

Different types of questions covered in this chapter are as follows

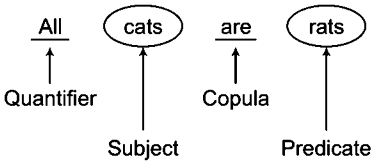
- Two Statements and Two Conclusions
- Three Statements and Two or More Conclusions
- Four Statements and Two or More Conclusions

'Syllogism' checks basic aptitude and ability of a candidate to derive inferences from given statements using step by step methods of solving problems.

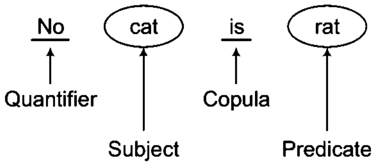
Proposition

Let us consider the following sentences

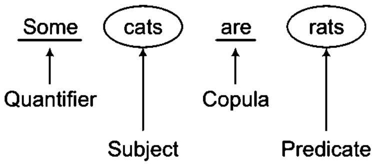
(i)


All
cats
are
rats
Quantifier
Copula
Subject
Predicate

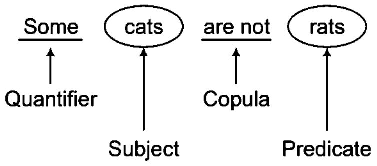
(ii)


No
cat
is
rat
Quantifier
Copula
Subject
Predicate

(iii)


Some
cats
are
rats
Quantifier
Copula
Subject
Predicate

(iv)


Some
cats
are not
rats
Quantifier
Copula
Subject
Predicate

In all the sentences mentioned above, a **relation** is established between **subject** and **predicate** with the help of **quantifier** and **copula**.

Now, we can define proposition as under

A **proposition** or **premise** is grammatical sentence comprising of four components.

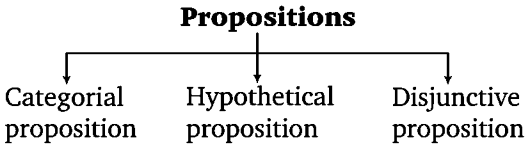
- Quantifier
- Subject
- Copula
- Predicate

Components of Proposition

- **Quantifier** The words 'All', 'No' and 'Some' are called quantifiers as they specify a quantity. Keep in mind that 'All' and 'No' are universal quantifiers because they refer to each and every object of a certain set.
  'Some' is a particular quantifier as it refers to atleast one existing object in a certain set.
- **Subject** Subject is the part of the sentence something is said about. It is denoted by S.
- **Copula** It is that part of a proposition that denotes the relation between subject and predicate.
- **Predicate** It is that part of a proposition which is affirmed detail about that subject.

Classification of Proposition

A proposition can mainly be divided into three categories


Propositions
Categorial proposition
Hypothetical proposition
Disjunctive proposition

(i) **Categorical Proposition** In categorical proposition, there exists a relationship between the subject and the predicate without any condition. It means predicate is either affirmation or denial of the subject unconditionally.

e.g., I. All cups are plates.
II. No girl is boy.

(ii) **Hypothetical Proposition** In a hypothetical proposition, relationship between subject and predicate is asserted conditionally.

e.g., I. If it rains, he will not come.
II. If he comes, I will accompany him.

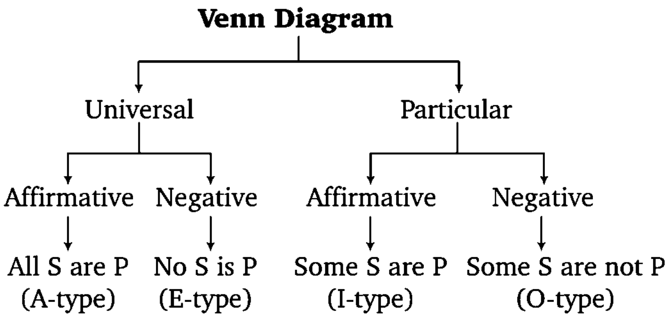
(iii) **Disjunctive Proposition** In a disjunctive proposition, the assertion is of alteration.

e.g., I. Either he is honest or he is loyal.
II. Either he is educated or he is illiterate.

Keeping in view with the existing pattern of Syllogism in competitive examinations, we are concerned only with the categorical type of proposition.

Venn Diagram Representation of Two Propositions

Types of Venn diagram can be understood by the following diagram


Venn Diagram
Universal
Particular
Affirmative
Negative
Affirmative
Negative
All S are P (A-type)
No S is P (E-type)
Some S are P (I-type)
Some S are not P (O-type)

From the above diagram, following things are very much clear

(i) Universal propositions, Either
(a) completely include the subject (A-type) or (b) completely exclude the subject (E-type)

(ii) Particular propositions, Either
(a) partly include the subject (I-type) or (b) partly exclude the subject (O-type)

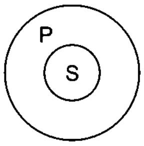
Now, we can summarize the four standard types of propositions (premises) as below

Format	Type
All S are P (Universal Affirmative)	A
No S is P (Universal Negative)	E
Some S are P (Particular Affirmative)	I
Some S are not P (Particular Negative)	O

Venn Diagram Representation

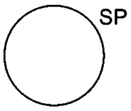
(i) **A-Type** (All S are P)

Either



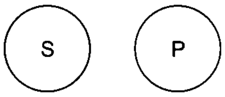
All S are P
(Some P are S)

Or



All S are P

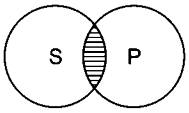
(ii) **E-Type** (No S is P)



No S is P

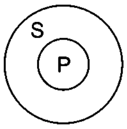
(iii) **E-Type** (No S is P)

Either



Some S are P
(Some S are not P)

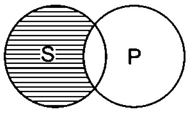
Or



Some S are P
(All P are S)

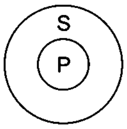
(iv) **O-Type** (Some S are not P)

Either



Some S are not P
(Some S are P)

Or



Some S are not P
(All P are S)

Hidden Propositions

The type of propositions we have discussed earlier are of standard nature but there are propositions which do not appear in standard format and yet can be classified under any of the four types.

Let us now discuss the type of such propositions

1. A-Type Propositions

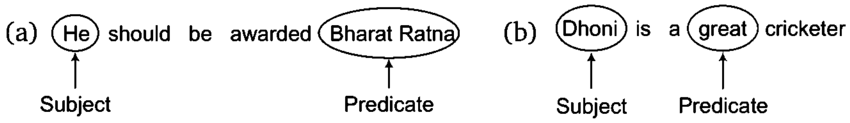
(i) All positive propositions beginning with 'every', 'each' and 'any' are A-type propositions.

e.g.,

(a) Every cot is mat ⇒ All cots are mats.
(b) Each of students of class V has passed. ⇒ All students of class V have passed.
(c) Anyone can do this job. ⇒ All (men) can do this job.

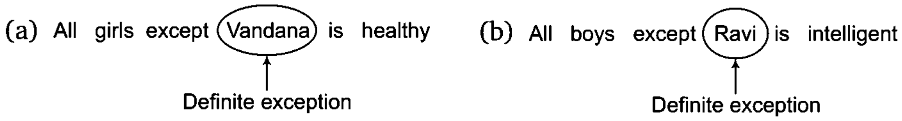
(ii) A positive sentence with a particular person as its subject is always an A-type proposition.

e.g.,


(a) He should be awarded Bharat Ratna
Subject
Predicate
(b) Dhoni is a great cricketer
Subject
Predicate

(iii) A sentence with a definite exception is A-type.

e.g.,


(a) All girls except Vandana is healthy
Definite exception
(b) All boys except Ravi is intelligent
Definite exception

II. E-Type Propositions

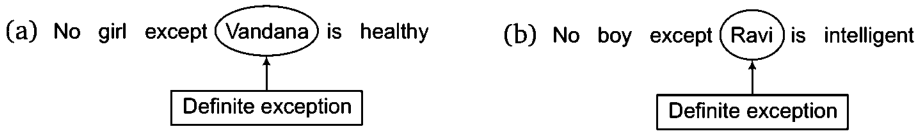
(i) All negative sentences beginning with 'no one', 'none', 'not a single' etc., are E-type propositions.
e.g.,

(a) Not a single student could answer the question.

(b) None can cross the English channel.

(ii) A negative sentence with a very definite exception is also of E-type proposition.

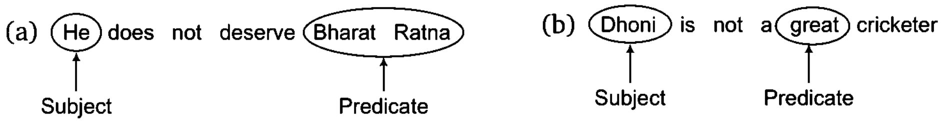
e.g.,


(a) No girl except Vandana is healthy
Definite exception
(b) No boy except Ravi is intelligent
Definite exception

(iii) When an interrogative sentence is used to make an assertion, this could be reduced to an E-type proposition.
e.g., Is there any person who can scale Mount Everest? ⇒ None can climb Mount Everest.

(iv) A negative sentence with a particular person as its subject is E-type proposition.

e.g.,


(a) He does not deserve Bharat Ratna
Subject
Predicate
(b) Dhoni is not a great cricketer
Subject
Predicate

III. I-Type Propositions

(i) Positive propositions beginning with words such as 'most', 'a few', 'mostly', 'generally', 'almost', 'frequently' and 'often' are to be reduced to the I-type propositions.

e.g., (a) Almost all the fruits have been sold. ⇒ Some fruits have been sold.

(b) Most of the students will qualify in the examination.
⇒ Some of the students will qualify in the examination.

(c) Girls are frequently physically weak. ⇒ Some girls are physically weak.

(ii) Negative propositions beginning with words such as 'few', 'seldom', 'hardly', 'scarcely', 'rarely', 'little' etc. are to be reduced to I-type propositions.

e.g., (a) Seldom players do not take rest. ⇒ Some players take rest.

(b) Few priests do not tell a lie. ⇒ Some priests tell a lie.

(c) Rarely IT professionals do not get a good job. ⇒ Some IT professionals get a good job.

(iii) A positive sentence with an exception which is not definite, is reduced to an I-type proposition.

e.g., (a) All boys except a few are handsome

Indefinite exception as names of boys are not given.

(b) All girls except four have passed

Indefinite exception as names of girls are not given.

IV. O-Type Propositions

(i) All negative propositions beginning with words such as 'all', 'every', 'any', 'each' etc. are to be reduced to O-type propositions.

e.g., (a) All innocents are not guilty. ⇒ Some innocents are not guilty.

(b) All that glitters is not gold. ⇒ Some glittering objects are not gold.

(c) Everyone is not present. ⇒ Some are not present.

(ii) Negative propositions with words as 'most', 'a few', 'mostly, 'generally', 'almost', 'frequently' are to be reduced to the O-type propositions.

e.g., (a) Girls are usually not physically weak. ⇒ Some girls are not physically weak.

(b) Priests are not frequently thiefs. ⇒ Some priests are not thiefs.

(c) Almost all the questions cannot be solved. ⇒ Some questions cannot be solved.

(iii) Positive propositions with starting words such as 'few', 'seldom', 'hardly', 'scarcely', 'rarely', 'little', etc., are to be reduced to the O-type propositions.

e.g., (a) Few girls are intelligent. ⇒ Some girls are not intelligent

(b) Seldom are innocents guilty. ⇒ Some innocent are not guilty.

(iv) A negative sentence with an exception, which is not definite is to be reduced to the O-type propositions.

e.g., (a) No girls except two are beautiful

Indefinite exception as names of girls are not given

(b) No cricketers except a few are great

Indefinite exception as names of cricketers are not given

Exclusive Propositions

Such propositions start with 'only', 'alone', 'none but', 'none else but' etc., and they can be reduced to either A or E or I-type.

e.g., Only graduates are officers.

None graduate is officer. (E-type)

All officers are graduates. (A-type)

Some graduates are officers. (I-type)

Types of Inferences

Inferences drawn from statements can be of two types

1. **Immediate Inference** When an inference is drawn from a single statement, then that inference is known as an immediate inference.

e.g., **Statement** All books are pages.
Conclusion Some pages are books.

In the above example, a conclusion is drawn from a single statement and does not require the second statement to be referred, hence the inference is called an immediate inference.

2. **Mediate Inference** In mediate inference, conclusion is drawn from two given statements.

   e.g., **Statements** All dogs are cats.
   All cats are black.
   Conclusion All dogs are black.

In the above example, conclusion is drawn from the two statements or in other words, both the statements are required to draw the conclusion. Hence, the above conclusion is known as mediate inference.

Method to Draw Immediate Inferences

There are various methods to draw immediate inferences like **conversion, obversion, contraposition**, etc. Keeping in view the nature of questions asked in various competitive examinations, we are required to study only two methods, **implications** and **conversion.**

(i) **Implications** (of a given proposition) Below we shall discuss the implications of all the four types of propositions. While drawing a conclusion through implication, **subject remains the subject and predicate remains the predicate.**

A-Type ***All boys are blue.***

From the above A-type proposition, it is very clear that if all boys are blue, then some boys will definitely be blue because some is a part of all. Hence, from A-type proposition, we can draw I-type conclusion (through implication).

E-Type ***No cars are buses.***

If no cars are buses, it clearly means that some cars are not buses. Hence, from E-type proposition, O-type conclusion (through implication) can be drawn.

I-Type ***Some chairs are tables.***

From the above I-type proposition, we can not draw any valid conclusion (through implication).

O-Type ***Some A are not B.***

From the above O-type proposition, we can not draw any valid inference (through implication). On first look, it appears that if some A are not B, then conclusion that some A are B must be true but the possibility of this conclusion being true can be over ruled with the help of following example.

Case I A = {a, b, c} and B = {d, e, f}

Case II A = {a, b, c} and B = {b, c, d}

The above two cases show the relationship between A and B given by O-type proposition “Some A are not B”.

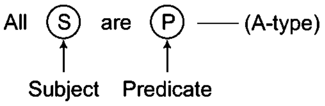
Now, in case I, none of the element of set A is the element of set B. Hence, conclusion “Some A are B” cannot be valid. However, in case II, elements b and c are common to both sets A and B. Hence, here conclusion “Some A are B” is valid. But for any conclusion to be true, it should be true for all the cases. Hence, conclusion “Some A are B” is not a valid conclusion drawn from an O-type proposition.

All the results derived for ***immediate inference*** *through* ***implication*** *can be presented in the table as below*

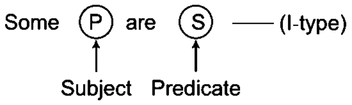
Types of propositions	Proposition	Types of inferences	Inference
A	All S are P	I	Some S are P
E	No S is P	O	Some S are not P
I	Some S are P	—	—
O	Some S are not P	—	—

(ii) **Conversion** Conversion is other way of getting immediate inferences. Unlike implication, in case of conversion, **subject becomes predicate and predicate becomes subject.** *Let us see*

- **Conversion of A-type**

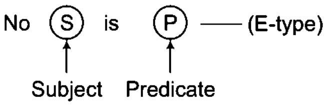

All (S) are (P) —— (A-type)
Subject
Predicate

After conversion it becomes

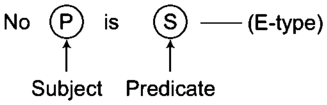

Some (P) are (S) —— (I-type)
Subject
Predicate

Clearly, A gets converted into I-type.

- **Conversion of E-type**

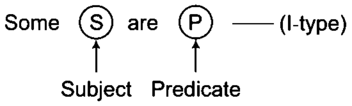

No (S) is (P) —— (E-type)
Subject
Predicate

After conversion it becomes

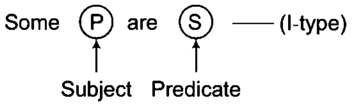

No (P) is (S) —— (E-type)
Subject
Predicate

Clearly, E gets converted into E-type.

- **Conversion of I-type**


Some (S) are (P) —— (I-type)
Subject
Predicate

After, conversion it becomes


Some (P) are (S) —— (I-type)
Subject
Predicate

Clearly, I gets converted into I-type.

- **Conversion of O-type**

O-type of propositions cannot be converted.

Now, we can make a conversion table as below

Types of propositions	Gets converted into
A	I
E	E
I	I
O	Never gets converted

Memory *Add-ons*

- In implication, subject and predicate do not interchange their places.
- In conversion, subject and predicate interchange their places.
  Now, we can make a complete table of immediate inferences combining both implication and conversion.

Immediate Inference Table

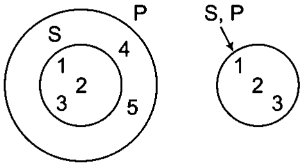
Types of Propositions	Format of Proposition	Valid immediate inference	Types of immediate inferences	Method
A	All S are P	Some S are P	I	Implication
		Some P are S	I	Conversion
E	No S is P	Some S are not P	O	Implication
		No P is S	E	Conversion
I	Some S are P	No valid inference	—	Implication
		Some P are S	I	Conversion
O	Some S are not P	No valid inference	—	Implication
		No valid inference	—	Conversion

Venn Diagram Representation of Immediate Inferences

Immediate inferences drawn from each type of propositions (A, E, I, O), as given in the above table, are based on the different rules (implication and conversion) as discussed above. The same inferences can also be drawn with the help of Venn-diagrams but one of the important points to be noted while drawing inference from Venn-diagrams is that all possibilities of Venn diagrams should be taken into account. Let us discuss each type of proposition in relation to the pictorial representation.

1. A-Type—All S are P

It is clear from the A-type of proposition that all S are contained in P. Therefore, circle representing S will be either inside or equal to circle representing P. However, in both the cases, conclusions (Some P are S) and (Some S are P) are true. This case can be understood clearly by taking two sets in all possible ways.



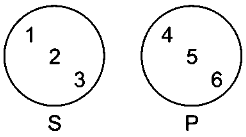
(i) S = {1, 2, 3}, P = {1, 2, 3, 4, 5} (ii) S = {1, 2, 3}, P = {1, 2, 3}

The above cases show the all the possibilities of two sets S and P showing the relationship between each other as represented by the proposition. All S are P, now in both the cases we see that set {2, 3} is the part of set S and also of set P. Hence, it is clear that inference (Some S are P) is true from this relationship. Likewise set {2, 3} is the part of set P and also of set S. Therefore, it is also clear that inference (Some P are S) is true. Inference (Some P are not S) is not valid because it is true from case (i) but false from case (ii). Inference (All P are S) is not valid because it is true from case (ii) and false from case (i).

2. E-Type—No S is P

There is only one possibility of Venn diagram representation of E-type proposition. The relationship can also be shown by two sets S = {1, 2, 3} and P = {4, 5, 6}. From these two sets, we see that set {2, 3} is the part of set S but not of set P. It implies that inference (Some S are not P) is true. Similarly, set {5, 6} is the part of set P but not of set S. This means that inference (some P are not S) is true.

Therefore, on the basis of E-type proposition, we can draw following immediate inferences.



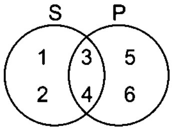
(i) No P is S (ii) Some S are not P (iii) Some P are not S

Any other immediate inference drawn from E-type proposition is not valid.

3. I-Type—Some S are P

This proposition gives rise to many possible representations of Venn diagrams and hence most of the inferences drawn therefrom are invalid and doubtful. This relationship can be shown by following sets and respective Venn diagrams.

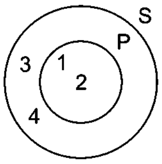
(i) S = {1, 2, 3, 4}, P = {3, 4, 5, 6}



(i)

Set {3, 4} is the part of set S as well as set P, hence some S are P.

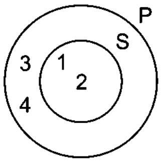
(ii) S = {1, 2, 3, 4}, P = {1, 2}



(ii)

Set {1, 2} is the part of set S as well as set P, hence some S are P.

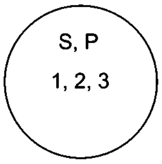
(iii) S = {1, 2}, P = {1, 2, 3, 4}



(iii)

Set {2} is the part of set S as well as set P, hence some S are P.

(iv) S = {1, 2, 3}, P = {1, 2, 3}



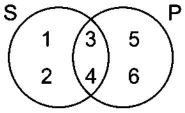
(iv)

Set {1, 2} is the part of set S as well as set P, hence some S are P.

The above four combinations of sets and respective diagrams show the relationship between S and P as represented by I-type proposition. From all the possible combinations, it is clear that inference (Some P are S) is true. Inference (Some S are not P) is true from combinations (i) and (ii) but it is not true from combinations (iii) and (iv). Therefore, inference (Some S are not P) is not a valid inference drawn from the above proposition.

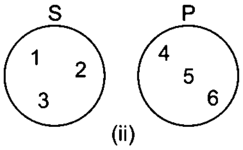
4. O-Type—Some S are not P

From this proposition, no immediate inference can be drawn. Let us discuss this proposition in the light of Venn-diagram representation.



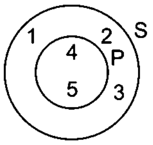
(i)

(i) S = {1, 2, 3, 4}, P = {3, 4, 5, 6}
Set {1, 2} is the part of set S but not of set P, hence this shows the relationship represented by the proposition 'Some S are not P'.



(ii)

(ii) S = {1, 2, 3}, P = {4, 5, 6}
Set {2, 3} is the part of set S but not of set P, hence this shows the relation represented by the proposition 'Some S are not P'.



(iii)

(iii) S = {1, 2, 3, 4, 5}, P = {4, 5}
Set {1, 2, 3} is the part of set S but not set P, hence denotes proposition 'Some S are not P'.
On the basis of all possible combinations showing relationship between S and P, no valid inference can be drawn. Inference (some S are P) is true from combinations (i) and (iii) but not true for combination (ii), hence it is invalid inference. Inference (some P are not S) is true from combination (i) and (ii) but not true for combination (iii). Hence, it is also invalid inference.

Method to Draw Mediate Inferences

Mediate inference can be drawn only if

- there are two statements/propositions
- there is a common term in the given two statements
- the common term is predicate of the first statement and subject of the second statement
- the following conclusion table is used

Mediate Inference Table

Proposition I	Proposition II	Type of conclusion
A	A	A
A	E	E
E	A	O^R
E	I	O^R
I	A	I
I	E	O

K Memory *Add-ons*

- Apart from 6 pairs of propositions given in the conclusion table no other pair will give any conclusion.
- The conclusion/inference drawn out of two propositions is itself a proposition and its subject is the subject of first statement while its predicate is predicate of the second statement. The common term gets disappeared.
- O^R means, The conclusion is of O-type but is in reverse order. In this case, the subject of the inference/conclusion is the predicate of the second statement and the predicate of the inference or conclusion is the subject of the first statement.
- The mediate inference table gives correct inference/conclusion if and only if the two statements are in proper alignment.

Alignment

Two statements are said to be aligned if and only if

- common term must be the predicate of the first statement
- common term must be the subject of the second statement

In other words, we can say that a pair of statements will be aligned, if predicate of the first statement is the subject of the second or subject of the second sentence is the predicate of the first.

Let us see the following pairs of statements

$$\text{(i)}\quad \left.\begin{array}{l}\text{All cats are rats}\\ \text{All rats are dogs}\end{array}\right\}\longrightarrow \text{Aligned pair}$$

In the above pair, common term = rats

The common term (rats) is the predicate of the first statement and subject of the second statement. Hence, the above pair is aligned.

$$\text{(ii)}\quad \left.\begin{array}{l}\text{Some bats are chairs}\\ \text{Some cars are bats}\end{array}\right\}\longrightarrow \text{Non-aligned pair}$$

In this case, common term = bats

The common term (bats) is not the predicate of the first statements and subject of the second statement. Hence, the given pair is not properly aligned.

Process of Alignment

1. **By changing order of sentences**

Let us consider the following pair of statements

$$\left.\begin{array}{ll}\text{I.} & \text{Some bats are chairs}\\ \text{II.} & \text{Some cats are bats}\end{array}\right\}\rightarrow \text{Non-aligned pair}$$

To make the above pair aligned, we change the order of the two sentences by putting Statement II in place of Statements I and I in place of Statement II as given below

$$\left.\begin{array}{ll}\text{I.} & \text{Some cats are bats}\\ \text{II.} & \text{Some bats are chairs}\end{array}\right\}\rightarrow \text{Aligned pair}$$

2. **By converting one of the sentences**

Let us consider the following pair of statements

$$\left.\begin{array}{ll}\text{I.} & \text{All bats are chairs}\\ \text{II.} & \text{Some bats are cats}\end{array}\right\}\rightarrow \text{Non-aligned pair}$$

Here, we convert Statement I to make the pair aligned.

$$\left.\begin{array}{ll}\text{I.} & \text{Some chairs are bats}\\ \text{II.} & \text{Some bats are cats}\end{array}\right\}\rightarrow \text{Aligned pair}$$

➘ All bats are chairs will be converted into some chairs are bats as A-type propositions get converted into I-type.

3. **By changing the order of statements and then converting one of the sentences**

Step 1 *Let us consider the following pair of statements*

$$\left.\begin{array}{ll}\text{I.} & \text{All bats are chairs}\\ \text{II.} & \text{All bats are cats}\end{array}\right\}\rightarrow \text{Non-aligned pair}$$

Let us change the order as below

I. All bats are cats

II. All bats are chairs

Step 2 *Do conversion for II and aligned pair takes the form as below*

$$\left.\begin{array}{l}\text{II. Some cats are cats} \\ \text{I. All bats are chairs}\end{array}\right\} \rightarrow \text{Aligned pair}$$

Hence, it is clear that alignment is done as per the requirement and nature of sentences.

Rule of Alignment (IEA)

While aligning the priority should be given in the following order

$$\xrightarrow{\text{I E A}}$$

i.e., I is converted before E and A.

E is converted before A.

A is converted at the end.

It means

- if I and E-type of statements are given, then I will be converted before E.
- if E and A-type of statements are given, then E will be converted before A.
- if I and A-type of statements are given, then I will be converted before A.

Finally we are in a position to draw **mediate inferences**. The method to draw such inferences consists of two main steps as below

Step 1 Aligning the pair of sentences if required

Step 2 Using mediate inference table

Let us solve some examples

e.g., **Statements** I. All cats are lions.

II. All lions are tigers.

Step 1 No need of alignment as the statements are already aligned. (Common term (lions) is predicate of 1st and subject of 2nd.)

Step 2 Use of mediate inference table

I. All cats are lions. (A-type)

II. All lions are tigers. (A-type)

From the mediate inference table

A + A = A-type of conclusion

∴ Valid conclusion = All cats are tigers.

Remember Subject of the first sentence is the subject of mediate inference and predicate of the second sentence is the predicate of the mediate inference while the common term (lions, in case of above example) gets disappeared.

e.g., **Statements** I. Some books are papers.

II. No copies are papers.

Step 1 Statements are not aligned as common term (papers) is the predicate of both the sentences. Hence, alignment is needed here. Statement I is I-type while Statement II is E-type. Therefore, according to IEA rule, Statement I gets converted 1st, then interchanges its position with II to be aligned with it. After alignment, both the statements are written as below

I. No copies are papers.

II. Some papers are books.

Step 2 Use of mediate inference table

I. No copies are papers. (E-type)
II. Some papers are books. (I-type)

From the mediate inference table $E + I = O^R$ – type of conclusion

$\therefore$ Valid conclusion = Some books are not copies.

➘ Conclusion in the form of O^R will follow the reverse pattern *i.e.*, subject of the first statement will be the predicate of the inference and predicate of the second statement will be the subject of the inference.

Method to Solve Problems

We have learnt deriving immediate and mediate inference separately but now we have come to the actual format of the questions in which the conclusion part may include

- only immediate inferences.
- only mediate inferences.
- both immediate and mediate inferences.

Therefore, while solving actual questions of syllogism we must check, if the given conclusions are immediate or mediate or both.

Let us consider the example

Statements I. Some dogs are pens.
II. All pens are pots.

Conclusions I. Some dogs are pots.
II. Some pens are pots.
III. All pots are pens.

(a) Only I follows (b) Only II follows (c) Only III follows (d) Both I and II follow
(e) None of these

Solving Process

Step 1 Check the immediate inferences

- Conclusion I is not the immediate inference of any of the two statements. *Let us see*

Statement I Some dogs are pens. (I-type)

↓

Immediate inference (by conversion I into I)

↓

Some pens are dogs. (I-type)

Clearly, Conclusion II is not the immediate inference of Statement I.

Statement II

All pens are pots. (A-type)

↓

Immediate inference

↓ ↓

Some pens are pots. (I-type)
(By implication A into I)

Some poets are pens. (I-type)
(by conversion A into I)

Clearly, Conclusion I is not the immediate inference of Statement II.

- Conclusion II is the immediate inference of Statement II (It is an immediate inference by implication.) which is already clear from above diagram. Hence, **this conclusion is valid**.
- Conclusion III definitely cannot be the immediate inference of any of the two statements because both I and A-type of statements produce an immediate inference in the form of I-type of proposition but Conclusion III is A-type proposition.

Decision of *Step* 1 Conclusion II follows

Step 2 Check the mediate inferences

- As Conclusion II has already been declared valid at step 1, we will check now Conclusions I and III.
- Conclusion I is mediate inference of the given statements. *Let us see*

I. Some dogs are pens (I-type) II. All pens are pots (A-type)

From the table of mediate inference I + A = I-type of conclusions

∴ Valid conclusion = Some dogs are pots = Conclusion I

- Conclusion III cannot be the valid mediate inference of given statements as I and A-type statements can give only I-type of mediate inference.

Decision of Step 2 Conclusion I follows.

Step 3

- Checking through conversion/implication of valid conclusions.
- At this stage only Conclusion III remains to be checked as Conclusion I and Conclusion II have already declared valid.
- Conclusion III will be invalid at step 3 also as valid Conclusions I and II both are I-type and I-type proposition produce I-type statement after conversion but Conclusion III is A-type. Further, no valid conclusion is possible through the implication of I-type of proposition.

Decision of Step 3 Conclusion III is invalid at step 3.

Step 4 Check mediate inferences derived from given statements and valid conclusions.

- At this stage, again Conclusion III remains to be checked. *Let us see*

Statement I Some dogs are pens. (I-type)
Conclusion I Some dogs are pots. (I-type)
I + I = No conclusion possible

Again, **Statement I** Some dogs are pens. (I-type)
Conclusion II Some pens are pots. (I-type)
I + I = No conclusion possible

Again, **Statement II** All pens are pots. (A-type)
Conclusion I Some dogs are pots. (I-type)
A + I = No conclusion possible

Again, **Statement II** All pens are pots. (A-type)
Conclusion II Some pens are pots. (I-type)
A + I = No conclusion possible

Further, conclusion is also not possible because subject and predicate of both Statement II and Conclusion II are same.

Decision of Step IV Conclusion III is invalid.

As Conclusions I and II are declared valid after the four steps mentioned above we can select option (d) (both I and II follow) as our answer.

On the basis of all the four steps mentioned above we can firmly say that valid conclusions are

- immediate inference and their conversion/implication
- mediate inferences and their conversion/implication
- mediate inferences derived from each of the given statement + each of the valid conclusion.

Let us find the total valid conclusions from pair of statements given below

Statements I. Some dogs are pens.
II. All pens are pots.

Conclusions I. Some pens are dogs.
II. Some pens are pots.
III. Some pots are pens.
IV. Some dogs are pots.
V. Some pots are dogs.

Explanations

- Conclusion I is the conversion of Statement I.
- Conclusion II is the implication of Statement II.
- Conclusion III is the conversion of Statement II.
- Conclusion IV is the mediate inference of Statements I and II.
- Conclusion V is the conversion of Conclusion IV.

➘ In the actual question, the conclusion part may include all/some/none of the valid conclusions.

Complimentary Pair of Conclusions ('Either-or' Situation)

In drawing mediate inference from given statements, students are required to be more attentive to select complementary pair of conclusions where neither of the conclusions is definitely true but a combination of both makes a complementary pair.

Let us consider the example

Statements Some cars are scooters. Some scooters are buses.

Conclusions I. Some cars are buses. II. No cars are buses.

Sol. Both the statements are properly aligned, therefore fulfil the first requirement but both the statements are of I-type and as per table for immediate inference, a combination I + I does not produce any valid mediate inference. Hence, no mediate inference can be drawn.

It is important to note here, that Conclusion I "Some cars are buses" is not valid because there is a possibility of "No cars are buses". Likewise, Conclusion II "No cars are buses" is invalid because there is a possibility of "Some cars are buses".

In other words, both the conclusions are invalid individually. However, we can say that either of Conclusion I or II is true. Hence, here, both the conclusions make a complementary pair of conclusions.

A complementary pair of conclusions must follow the following two conditions

I. Both of them must have the same subject and the same predicate.
II. They are any one of three types of pairs.
(a) I-O type (b) A-O type (c) I-E type

The following examples show the complementary pairs.

e.g., 1. (i) All trees are green. (A-type)
(ii) Some trees are not green. (O-type)

2. (i) Some trees are green. (I-type)
(ii) Some trees are not green. (O-type)

3. (i) Some trees are green. (I-type)
(ii) No trees are green. (E-type)

All the three pairs of conclusions comply with the two conditions given above to form a complementary pair, hence form a complementary pair.

The following examples show the pairs which do not form a complementary pair.

e.g., 1. (i) All trees are green. (A-type)
(ii) Some green are not trees. (O-type)

2. (i) All trees are green. (A-type)
(ii) No trees are green. (E-type)

Though the first pair is A O-type pair, yet it does not form a complementary pair because subject and predicate of both the propositions are not the same. Second pair is not a complementary pair because A-E type proposition does not form a complementary pair. Finally, we can combine all the approaches and steps together to prepare a summarized stepwise approach for solving problems. Such as

- Step 1 is the aligning of statements if required.
- Step 2 is the checking of immediate inferences.
- Step 3 is the checking of mediate inferences using mediate inference table.
- Step 4 is the checking of conversion/implication of valid conclusions.
- Step 5 is the checking of mediate inferences derived from the combination of each given statement and each valid conclusion.
- Step 6 is the checking of complementary pair of conclusions.

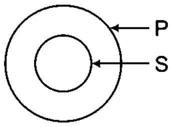
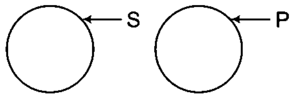
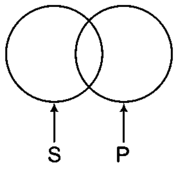
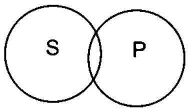
➘ The above solving method of Syllogism is called **Analytical Method**.

Method To Solve Problems Through Venn Diagram

Step 1 Drawing standard representation for each statement separately.

Point to be noted that standard representation means a representation which is most common and usually sufficient way to denote the statement.

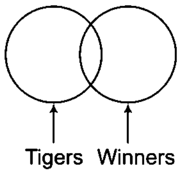
Let us see the standard representation of all the four standard types of proposition

Types of propositions	**Standard representation**
All S are P (A-type)	
No S is P(E-type)	
Some S are P (I-type)	
Some S are not P (O-type)	

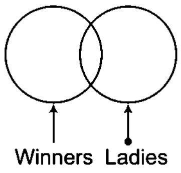
Let us consider the following pair of statements

Statements I. Some tigers are winners.
II. Some winners are ladies.

Standard representation for Statement I

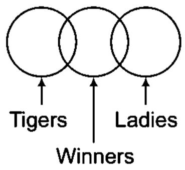


Standard representation for Statement II

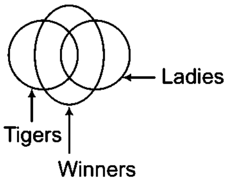


Step 2 Combining the representations (drawn in Step 1) in all possible ways. *Let us see*

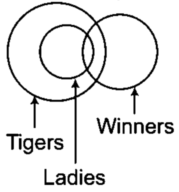
(i)



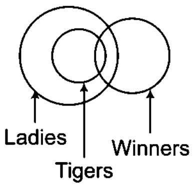
or (ii)



(iii)



or (iv)



Step 3 Making interpretations from the combined figures obtained from Step 2.

Point to be noted that any given conclusion will be true if and only if it is supported by all the combined figures and no combined figure contradicts it.

Let us consider over two conclusions

X. Some winners are tigers.
Y. Some tigers are ladies.

- **Conclusion** X (Some winners are tigers) is a valid conclusion as it is supported by all the combined figures (i), (ii), (iii) and (iv) represented in step 2.
- **Conclusion** Y (Some tigers are ladies) is an invalid conclusion at it is rejected by figure (i) represented in Step 2.

Step 4 Checking the complementary pair of conclusions.

➘ If any two conclusions are found to be invalid and they are in the pair of I-O or A-O or I-E type of propositions, then in this case the pair of conclusions forms a complementary pair. Further, in complementary pair subject and predicate are same in both sentences.

e.g., The following conclusions form a complementary pair for the statements given in Step 1

A. Some tigers are ladies.
B. Some tigers are not ladies.

Conclusion A (Some tigers are ladies) is invalid because of the rejection by combined figure (i) obtained from Step 2.

Conclusion B (Some tigers are not ladies) is invalid because of the rejection by combined figures (ii), (iii) and (iv) obtained from Step 2.

- Conclusions A and B both have same subject – tigers
- Conclusions A and B both have same predicate – ladies
  Hence, Conclusions A and B form complementary pair.

Avoiding Confusion While Selecting Complementary Pair

On some occasions, a pair of conclusions may be complementary but it may not appear so. Let us see the following pair of propositions

I. Some bikes are hangers.
II. Some hangers are not bikes.

In this case,

I. Subject of 1st statement = bikes
II. Predicate of 1st statement = hangers
III. Subject of 2nd statement = hangers
IV. Predicate of 2nd statement = bikes

Clearly, both statements have different subject and predicate. Hence, both the statements do not appear to be complementary but if we convert the first sentence from

I. 'Some bikes are hangers'.
II. 'Some hangers are bikes'.

Then, the two statements have the same subject and predicate now and they take the form as under

$$\left.\begin{array}{l}\text{Some hangers are bikes}\\ \text{Some hangers are not bikes}\end{array}\right\}\rightarrow \text{Complementary pair}$$

Generally, there are three types of questions can be asked in various competitive examination which is as follows

Type 1 Two Statements and Two Conclusions

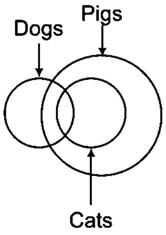
In this type of questions, two statements and two conclusions are given. The candidate is required to check the validity of the given conclusions on the basis of the given statements.

Directions (Example Nos. 1-5) In the question below are given two statements followed by two conclusions. You have to take the two given statements to be true even if they seem to be at variance from commonly known facts and decide which of the conclusion(s) logically follow(s) from the two given statements.

Give answer
(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either Conclusion I or II follows
(d) if both Conclusions I and II follow

Ex **1** **Statements** Some dogs are cats. All cats are pigs.
Conclusions I. Some cats are dogs. II. Some dogs are pigs.

Sol. (*d*) According to the question,



Clearly,

I. Some cats are dogs. (✓) II. Some dogs are pigs. (✓)

Solution by using mediate and immediate inference table

Some dogs are cats. (I-type) All cats are pigs. (A-type)

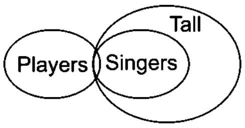
I + A = I-type of conclusion = Some dogs are pigs = Conclusion II

Again, Some dogs are cats $\xrightarrow{\text{Conversion}}$ Some cats are dogs = Conclusion I

Clearly, Conclusions I and II both follow.

Ex **2** **Statements** Some players are singers. All singers are tall.
Conclusions I. Some players are tall. II. All players are tall.

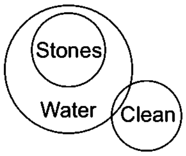
Sol. (*a*)



Conclusions I. Some players are tall. (✓) II. All players are tall. (✗)

Ex **3** **Statements** All stones are water. Some water are clean.
Conclusions I. Some water are stones. II. All clean are water.

Sol. (*a*)



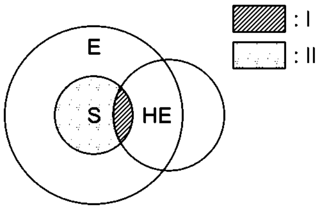
Conclusions I. Some water are stones. (✓) II. All clean are water. (✗)

Ex **4** **Statements** All students like excursions. Some students go for higher education.

Conclusions I. Students who go for higher education also like excursions.

II. Some students do not go for higher education, but like excursions.

Sol. (*d*)



S : Students

E : People who like excursions

HE : People who go for higher education.

Conclusions I. Students who go for higher education also like excursions. (✓)

II. Some students do not go for higher educations but like excursions. (✓)

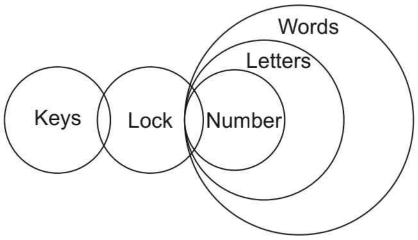
Ex **5** **Statements** Some keys are locks, some locks are numbers.

All numbers are letters, all letters are words. **[SSC (CGL) 2013]**

Conclusions I. Some words are numbers.

II. Some locks are letters.

Sol. (*d*)



Conclusions I. Some words are numbers. (✓)

II. Some locks are letters. (✓)

Practice Corner **8.1**

Build your Confidence...

Directions (Q. Nos. 1-28) In each of the questions below are given two statements followed by two conclusions numbered I and II. You have to take the two given statements to be true even if they seem to be at variance from commonly known facts and decide which of the given conclusion(s) logically follow(s) from the two given statements, disregarding commonly known facts.

Give answer

(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either I or II follows
(d) if neither I nor II follows
(e) if both I and II follow

1. Statements All cars are balls.
All balls are tables.

Conclusions I. Some tables are balls.
II. Some tables are cars.

2. Statements Some rats are cats.
All cats are bats.

Conclusions I. No rats are cats.
II. Some rats are bats.

3. Statements Some schools are factories.
All factories are shops.

Conclusions I. All shops are factories.
III. Some shops are schools.

4. Statements Latha is a beautiful and intelligent girl.
She is very good.

Conclusions I. All beautiful girls are intelligent.
II. Beauty and intelligence are the factors of goodness.

5. Statements All writers are lawyers.
All readers are lawyers.

Conclusions I. Some lawyers are readers.
II. Some readers are writers.

6. Statements No colour is a paint.
No paint is a brush. [SBI (Clerk) 2012]

Conclusions I. No colour is a brush.
II. All brushes are colours.

7. Statements All stars are planets.
All planets are galaxies. [SBI (Clerk) 2012]

Conclusions I. All galaxies are planets.
II. All stars are galaxies.

8. Statements Some bags are hots.
All hots are cakes.

Conclusions I. All cakes are bags.
II. All bags are cakes.

9. Statements All players are doctors.
Some doctors are actors.

Conclusions I. Some doctors are players as well as actors.
II. All actors are doctors.

10. Statements Some exams are tests.
No exam is a question.

Conclusions I. No question is a test.
II. Some tests are exams.

11. Statements No house is an apartment.
Some apartments are bungalows.
[UCO Bank (Clerk) 2011]

Conclusions I. No house is a bungalow.
II. All bungalows being houses is a possibility.

12. Statements All plants are animals.
All insects are plants. [UCO Bank (Clerk) 2011]

Conclusions I. All insects being animals is a possibility.
II. There is a possibility that some animals are neither insects nor plants.

13. Statements All pens are ink.
No ink is an eraser. [UCO Bank (Clerk) 2011]

Conclusions I. No pen is an eraser.
II. Some erasers are pens.

14. Statements Some gears are wheels.
All wheels are brakes.

Conclusions I. No brake is gear.
II. Atleast some gears are brakes.

15. Statements No month is a year.
No year is a second.

Conclusions I. All months are seconds.
II. No second is month.

16. Statements Some cities are towns.
Some villages are cities.

Conclusions I. Atleast some villages are towns.
II. No village is a town.

17. Statements Some pins are clips.
Some clips are pens. [Andhra Bank (PO) 2010]

Conclusions I. Some pins are pens.
II. Some pins are not pens.

18. Statements All Ds are As.
All As are Cs. [Andhra Bank (PO) 2010]

Conclusions I. All Ds are Cs.
II. Some Ds are As.

19. Statements Some trees are plants.
All bushes are plants. [IBPS (PO) 2012]

Conclusions I. Atleast some trees are bushes.
II. Some trees are definitely not bushes.

20. Statements All bottlers are glasses.
No cup is a glass. [SBI (Clerk) 2012]

Conclusions I. No bottle is a cup.
II. Atleast some glasses are bottles.

21. Statements No bangle is an earrings.
Some earrings are rings. [RBI (Grade 'B') 2012]

Conclusions I. No ring is a bangle.
II. Some rings are definitely not earrings.

22. Statements All seats are hot.
All belts are hot. [Canara Bank (PO) 2010]

Conclusions I. All seats are belt.
II. All hots are either seats or belts.

23. Statements All exams are tests.
No test is a question. [RBI (Grade 'B') 2012]

Conclusions I. Atleast some exams are questions.
II. No exam is a question.

24. Statements All rivers are lakes.
All lakes are oceans. [RBI (Grade 'B') 2012]

Conclusions I. All rivers are oceans.
II. Atleast some oceans are lakes.

25. Statements Some banks are colleges.
All colleges are schools. [RBI (Grade 'B') 2012]

Conclusions I. Atleast some banks are schools.
II. All schools are colleges.

26. Statements Some exams are tests.
No exam is a question. [IBPS (PO) 2012]

Conclusions I. No question is a test.
II. Some tests are definitely not exams.

27. Statements Some wires are fires.
All fires are tyres. [SBI (Clerk) 2012]

Conclusions I. Atleast some tyres are wires.
II. Some fires are definitely not wires.

28. Statements No toffee is coffee.
No sweet is toffee. [SBI (Clerk) 2012]

Conclusions I. No coffee is sweet.
II. All sweets are coffee.

Directions (Q. Nos. 29-34) Two statements are given below followed by two Conclusions I and II. You have to consider the two statements to be true even if they seem to be at variance with commonly known facts. You have to decide which of the conclusions, if any, follow from the given statements.

Give answer

(a) Only I follows
(b) Only II follows
(c) Both I and II follow
(d) Neither I nor II follows

29. Statements Some books are magazines.
Some magazines are novels.

Conclusions I. Some books are novels.
II. Some novels are magazines.

30. Statements All good hockey players are in the Indian hockey team.
'X' is not a good hockey player. [CLAT 2014]

Conclusions I. 'X' is not in the Indian Hockey team.
II. 'X' wants to be in the Indian Hockey team.

31. Statements Some scales are pencils.
Some erasers are pencils.
[SSC (Multitasking) 2014]

Conclusions I. Some pencils are erasers.
II. Some pencils are scales.

32. Statements Some chairs are made up of wood.
Some tables are made up of wood.

Conclusions I. All wooden things are either chairs or tables.
II. Some chairs are tables.

33. Statements All good athletes win.
All good athletes eat well. [MAT 2014]

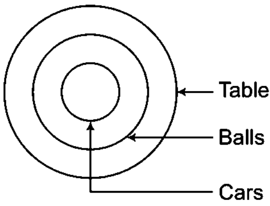
Conclusions I. All those who eat well are good athletes.
II. All those who win eat well.

34. Statements Some scooters are trucks.
All trucks are trains.

Conclusions I. Some scooters are trains.
II. No truck is a scooter.

Response & Interpretations **(8.1)**

1. (*e*) **Method I**


Tables
Balls
Cars

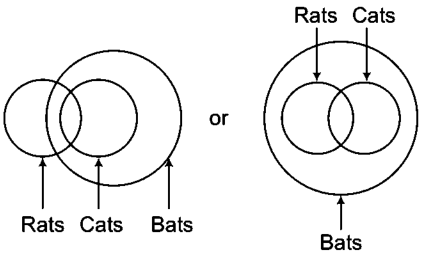
I. Some tables are balls. (✓)
II. Some tables are cars. (✓)

Solutions by using mediate and immediate inference table.

All cars are balls. (A-type)
All balls are tables. (A-type)
A + B = A-type conclusion = All cares are tables.
All cars are tables $\xrightarrow{\text{Conversion}}$ Some tables are cars
= Conclusion II $\xrightarrow{\text{Conversion}}$ Some tables are balls
= Conclusion I

Hence, both Conclusions I and II follow.
All balls are tables.

2. (*b*) **Method I**

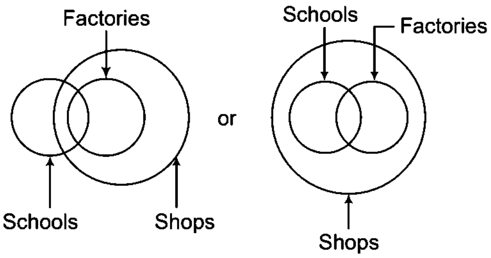

Rats
Cats
Bats
or
Rats
Cats
Bats

I. No rats are cats. (✗)
II. Some rats are bats. (✓)

Method II

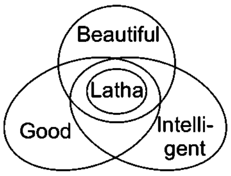
Some rats are cats. (I-type)
All cats are bats. (A-type)
I + A = I-type conclusion
Some rats are bats = Conclusion II
No rats are cats is invalid because.
Some rats are cats (Statement I).
So, only Conclusion II follows.

3. (*b*)


Factories
Schools
Shops
or
Schools
Factories
Shops

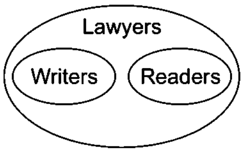
I. All shops are factories. (✗)
II. Some shops are schools. (✓)

4. (*d*)


Beautiful
Latha
Good
Intelli-gent

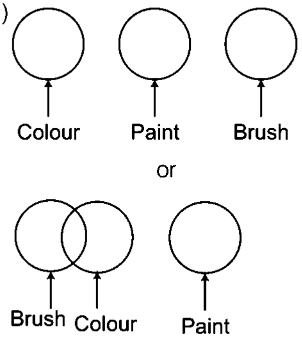
I. All beautiful girls are intelligent. (✗)
II. Beauty and intelligence are the factors of goodness. (✓)

5. (*a*)


Lawyers
Writers
Readers

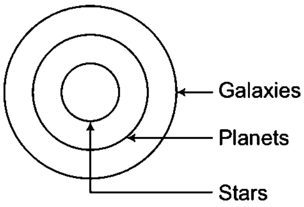
I. Some lawyers are readers. (✓)
II. Some readers are writers. (✗)

6. (*d*)


Colour
Paint
Brush
or
Brush
Colour
Paint

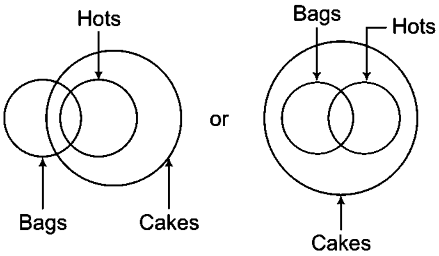
I. No colour is a brush. (✗)
II. All brushes are colours. (✗)

7. (*b*)


Galaxies
Planets
Stars

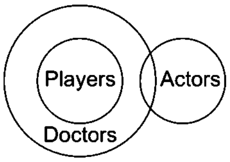
I. All galaxies are planets. (✗)
II. All stars are galaxies. (✓)

8. (*d*)


Hots
Bags
Cakes
or
Bags
Hots
Cakes

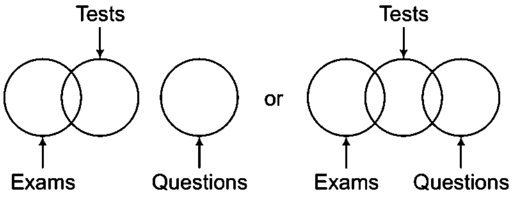
I. All cakes are bags. (✗)
II. All bags are cakes. (✗)

9. (*a*)


Players
Actors
Doctors

From above, it is clear that only Conclusion I follows.

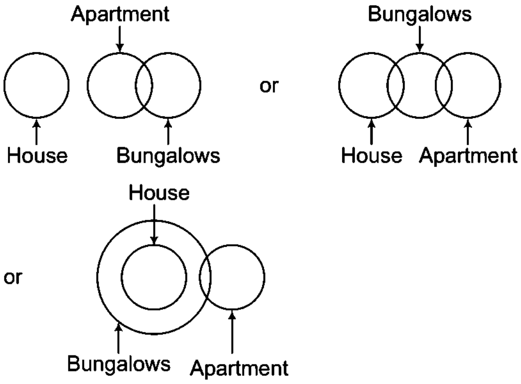
10. (*b*) **Methods I**


Tests
Exams
Questions
or
Tests
Exams
Questions

I. No question is a test. (✗)
II. Some tests are exams. (✓)

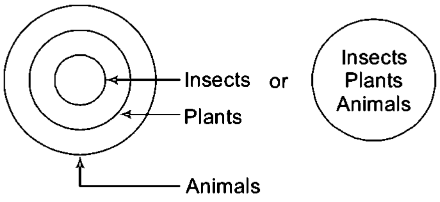
Some exams are tests. (I-type)
No exam is a question. (E-type)
First we align the statements by following IEA Rule.
Some exams are tests $\xrightarrow{\text{Conversion}}$ Some tests are exams.
Some tests are exams. (I-types)
No exam is a question. (E-type)
Statement I = Conclusion II
I + E = O-type conclusion
i.e., some tests are not questions.
Hence, Conclusion I does not follows.
So, only Conclusion II follows.

11. (*d*)


Apartment
House
Bungalows
or
Bungalows
House
Apartment
or
House
Bungalows
Apartment

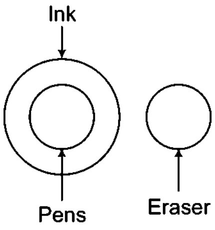
I. No house is a bungalow. (✗)
II. All bungalows being houses is a possibility. (✗)

12. (*e*)


Insects
Plants
Animals
or
Insects
Plants
Animals

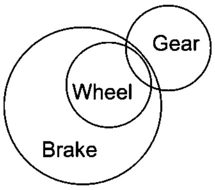
I. All insects being animals is a possibility. (✓)
II. There is a possibility that some animals are neither insects nor plant. (✓)

13. (*a*)


Ink
Pens
Eraser

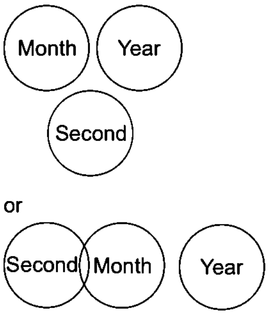
I. No pen is an eraser. (✓)
II. Some erasers are pens. (✗)

14. (*b*)


Gear
Wheel
Brake

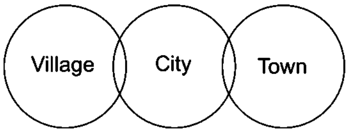
So, only Conclusion II follows.

15. (*d*)


Month
Year
Second
or
Second
Month
Year

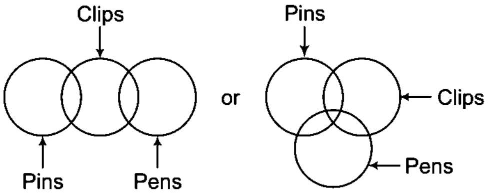
None follows.

16. (*c*)


Village
City
Town

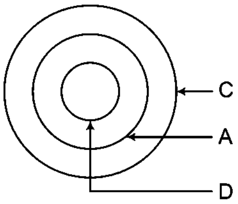
Complementary pair (E-I)

17. (*c*)


Clips
Pins
Pens
or
Pins
Clips
Pens

I. Some pins are pens. (✗)
II. Some pins are not pens. (✗)
Complementary pair (I-O)

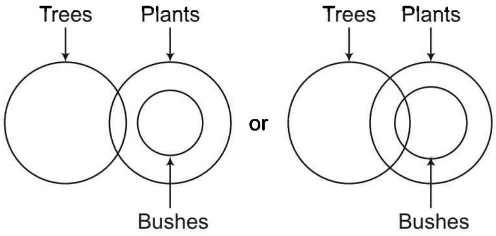
18. (*e*) **Method I**



I. All Ds are Cs. (✓)
II. Some Ds are As. (✓)

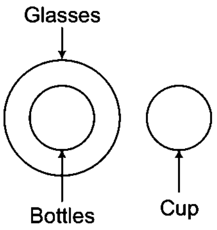
All Ds are As. (A-type)
All As are Cs. (A-type)
A + A = A-type conclusion
All Ds are Cs = Conclusion I
All Ds are As $\xrightarrow{\text{Implication}}$ Some Ds are As
= Conclusion II
Hence, both Conclusions I and II follow.

19. (*c*)


Trees
Plants
or
Trees
Plants
Bushes
Bushes

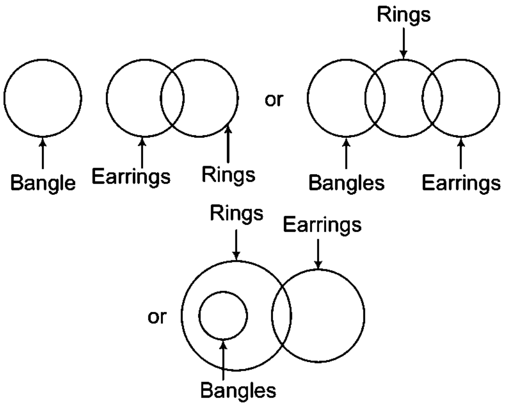
I. Atleast some trees are bushes. (✗)
II. Some trees are definitely not bushes. (✗)
Complementary pair (I-O)

20. (*e*)


Glasses
Bottles
Cup

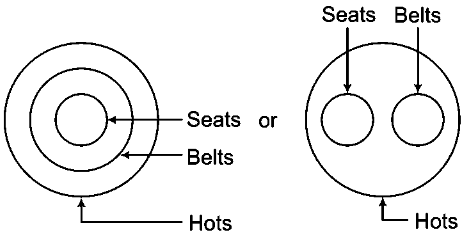
I. No bottle is a cup. (✓)
II. Atleast some glasses are bottles. (✓)

21. (*d*)


Rings
Bangle
Earrings
Rings
or
Bangles
Earrings
Rings
Earrings
or
Bangles

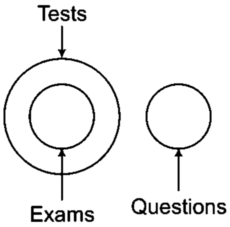
I. No ring is a bangle. (✗)
II. Some rings are definitely not earrings. (✗)

22. (*d*)


Seats
Belts
Seats
or
Belts
Hots
Hots

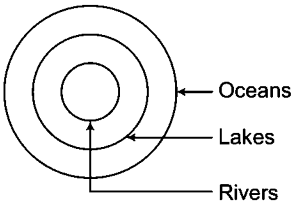
I. All seats are belts. (✗)
II. All hots are either seats or belts. (✗)

23. (*b*)


Tests
Exams
Questions

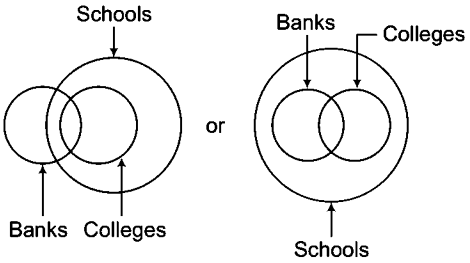
I. Atleast some exams are questions. (✗)
II. No exam is a question. (✓)

24. (*e*)


Oceans
Lakes
Rivers

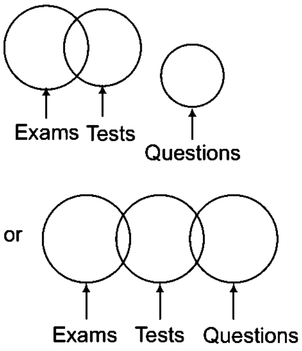
I. All rivers are oceans. (✓)
II. Some oceans are lakes. (✓)

25. (*a*)


Schools
Banks
Colleges
or
Banks
Colleges
Schools

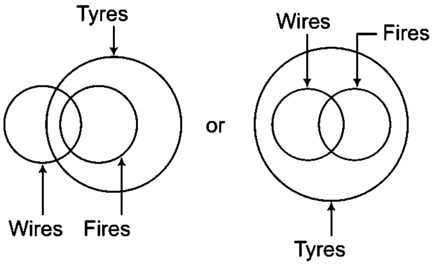
I. Atleast some banks are schools. (✓)
II. All schools are colleges. (✗)

26. (*d*)


Exams
Tests
Questions
or
Exams
Tests
Questions

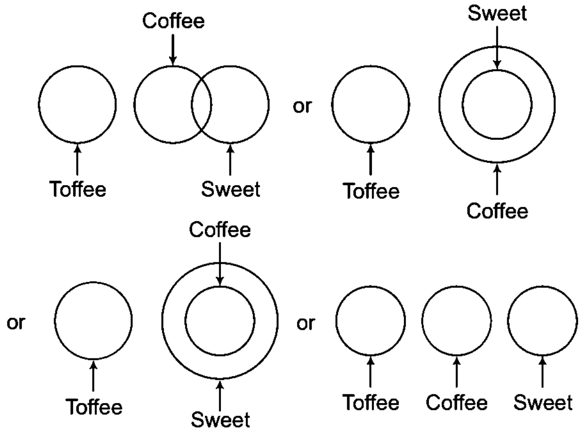
I. No question is a test. (✗)
II. Some tests are definitely not exams. (✗)

27. (*a*)


Tyres
Wires
Fires
or
Wires
Fires
Tyres

I. Atleast some tyres are wires. (✓)
II. Some fires are definitely not wires. (✗)

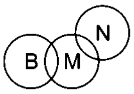
28. (*d*) **Method I**


Coffee
Sweet
or
Toffee
Sweet
Toffee
Coffee
Coffee
or
or
Toffee
Sweet
Toffee
Coffee
Sweet

I. No coffee is sweet. (✗)
II. All sweets are coffee. (✗)

No toffee is coffee. (E-type)
No sweet is toffee. (E-type)
E + E = Invalid conclusion
From Conclusion I,
No coffee is sweet $\xrightarrow{\text{Conversion}}$ No sweet is coffee.
No sweet is coffee. (E-type)
All sweets are coffee. (A-type)
Since, they have same subject and predicate they does not form complementary pair.
Hence, neither of the conclusion follows.

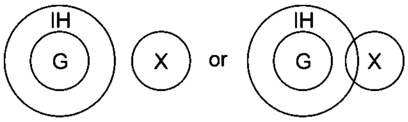
29. (*b*)



B : Books
M : Magazines
N : Novels

I. Some books are novels. (✗)
II. Some novels are magazines. (✓)

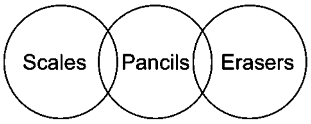
30. (*d*) Neither of the two conclusions follows 'X' may or may not be inside the outer circle (representing people in the Indian Hockey Team)


IH
G
X
or
IH
G
X

G : Good Hockey Players
IH : People in Indian Hockey Team

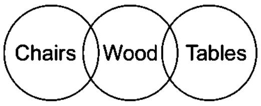
I. 'X' is not in the Indian Hockey Team. (✗)
II. 'X' wants to be in the Indian Hockey Team. (✗)

31. (*c*)


Scales
Pancils
Erasers

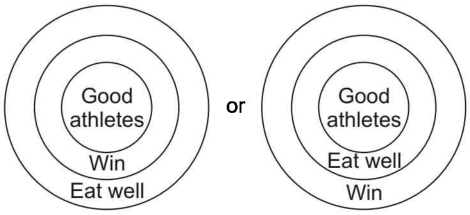
I. Some pencils are erasers. (✓)
II. Some pencils are scales. (✓)

32. (*b*)


Chairs
Wood
Tables

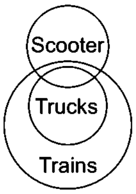
I. All wooden things are either chairs or tables. (✗)
II. Some chairs are tables. (✗)

33. (*d*)


Good athletes
Win
Eat well
or
Good athletes
Eat well
Win

I. All those who eat well are good athletes. (✗)
II. All those who win eat well. (✗)

34. (*a*)


Scooter
Trucks
Trains

I. Some scooters are trains. (✓)
II. No truck is a scooter. (✗)

Type 2 Three Statements and Two or More Conclusions

In this type of syllogism, three statements and some conclusions are given. The candidate is required to check the validity of the conclusions on the basis of given statements.

Solving Methods

(i) **Venn Diagram Method** This method is as same as the method we use to solve two statement syllogism. The only difference here is that you have to make diagrams for three statements instead of two. Let us refresh the process again in short

Step I Separate representation for each statement.

Step II Combining the representations obtained from step I in all possible ways.

Step III Making interpretations from the combined figures obtained from step II.

➘ Any given conclusion will be true if and only if it is supported by all the combined figures and no combined figure contradicts it.

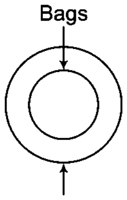
Step IV Checkingthe complementary pair.

Let us see the following solution

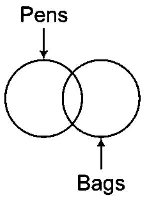
Statements All bags are caps.
Some pens are bags.
No caps are desks.

Conclusions I. Some pens are caps.
II. No desks are bags.
III. Some pens are desks.
IV. Some caps are bags.

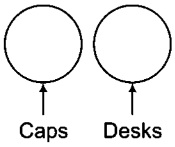
Step I Separate representations



All bags are caps



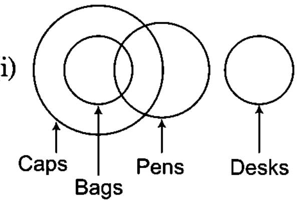
Some pens are bags



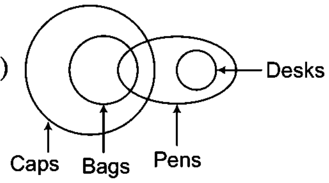
No caps are desks

Step II Combining the representations obtained from step I.

(i)



(iii)



Step III Making interpretations from the figures in step II.

Conclusions I. Some pens are caps (✓) – Supported by all figures
II. No desks are bags (✓) – Supported by all figures
III. Some pens are desks (✗) – Denied by figure (i)
IV. Some caps are bags (✓) – Supported by all figures

Step IV Checking the complementary pair.
No complementary pair.

Decision Valid conclusions = I, II and IV
Invalid conclusion = III

(ii) **Solution Through Mediate/Immediate Inference Table** The two statements syllogism is again the base for the solution of three statement syllogism. Here, we will solve the same three statement syllogism what we have solved through Venn diagram above.

Let us see

Statements All bags are caps.
Some pens are bags.
No caps are desks.

Conclusions I. Some pens are caps.
II. No desks are bags.
III. Some pens are desks.
IV. Some caps are bags.

Sol. The first step in solving these questions is to select two statements for each of the conclusions in such a way that subject and predicate of the conclusion should be present in these statements and importantly, these statements should be linked with the 'common term'.

Conclusion I For Conclusion I, 'Some pens are caps', we can take Statements 1 and 2 because these two statements have subject 'pens' and predicate 'caps' of the statements and are linked with the common term 'bags'. Now, to draw mediate inference these two statements have to be aligned in such a way that predicate of the first statement is the subject of the second statement. Hence, these two statements can be aligned as follows.

Some pens are bags. (I-type)
All bags are caps. (A-type)

From the table of mediate inference, we know that I + A = I.

Therefore, conclusion will be 'Some pens are caps'. Hence, Conclusion I is valid.

Conclusion II Statements 1 and 3 are relevant for conclusion II 'No desks are bags". These two statements are already aligned.

All bags are caps. (A-type)
No caps are desks. (E-type)

We know that, A + E = E. Therefore, from these two statements, conclusion 'No bags are desks' are valid. But our conclusion is 'No desks are bags'. We know that, E-type proposition can be converted into E-type proposition. *i.e.,* No bags are desks ⇒ No desks are bags. Hence, Conclusion II is valid.

Conclusion III For this conclusion, we cannot choose any two statements because out of three, no two statements containing subject and predicate of the conclusion are linked with the common term. Therefore, all the three statements are relevant to test this inference. For this, we should write the three statements in such a way that the predicate of the first is the subject of second and predicate for second is the subject of the third.

Some pens are bags. (I-type)
All bags are caps. (A-type)
No caps are desks. (E-type)

From the combination of all these statements, we find that I + A + E = (I + A) + E = I + E = O. Thus, a valid conclusion would be of O-type, *i.e.,* 'Some pens are not desks'. Hence, Conclusion III 'Some pens are desks' is not valid conclusion.

Conclusion IV Conclusion IV 'Some caps are bags' is immediate inference drawn from statement 1. From the rule of conversion, we know All bags are caps ⇒ Some caps are bags. Hence, Conclusion IV is valid.

➘ If in a given option a possibility is asked, then draw all the possibilities of venn diagram and answer the question accordingly.

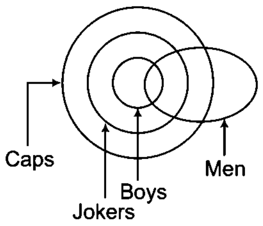
Direction (Example No. 6) In the question below are given three statements followed by two conclusions numbered I and II. You have to take the two given statements to be true even if they seem to be at variance from commonly known facts and decide which of the given conclusion(s) logically follow (s) from the three given statements.

Give answer
(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either Conclusion I or II follows
(d) if neither Conclusion I nor II follows
(e) if both Conclusions I and II follow

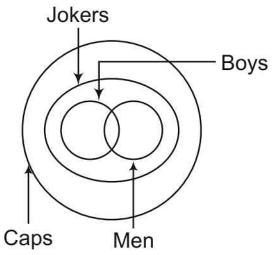
Statements All boys are jokers.
Some men are boys.
All jokers are caps.

Conclusions I. Some caps are boys. II. Some men are caps.

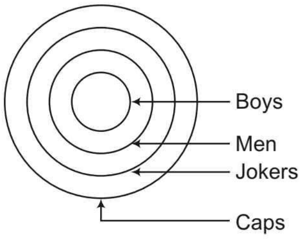
Sol. (*e*)



or



or



Conclusions I. Some caps are boys (✓)

II. Some men are caps (✓)

Solution by using mediate/immediate inference table

From first and last statements.

All boys are jokers. (A-type)

All jokers are caps. (A-type)

A + A = A-type of conclusion = 'All boys are caps'. …(i)

(i) $\xrightarrow{\text{Conversion}}$ Some caps are boys = Conclusion I

Again, from second statement and (i),

Some men are boys. (I-type)

All boys are caps. (A-type)

I + A = I-type of statements = Some men are caps = Conclusion II

Hence, Conclusions I and II both valid.

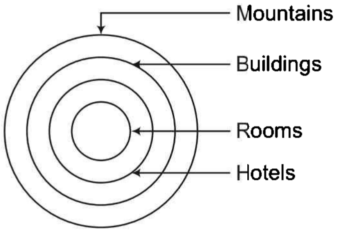
Direction (Example No. 7) In the question below are given three statements followed by three conclusions numbered I, II and III. You have to take the three given statements to be true even if they seem to be at variance from commonly known facts and decide which of the given conclusion(s) logically follow (s) from the three given statements.

Give answer
(a) if Conclusions I and II follow
(b) if Conclusions I and III follow
(c) if Conclusions II and III follow
(d) All I, II and III follow

Statements All rooms are hotels.
All hotels are buildings.
All buildings are mountains.

Conclusions I. Some mountains are hotels.
II. Some buildings are rooms.
III. Some mountains are rooms.

Sol. (*d*)



Conclusions I. Some mountains are hotels. (✓)

II. Some buildings are rooms. (✓)

III. Some mountains are rooms. (✓)

Direction (Example No. 8) In the question below are given three statements followed by four conclusions numbered I II, III and IV. You have to take the three given statements to be true even if they seem to be at variance from commonly known facts and decide which of the given conclusion(s) logically follow (s) from the three given statements.

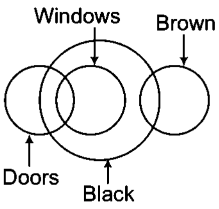
Give answer

(a) if only Conclusion III follows
(b) if either Conclusions I or IV and III follow
(c) if only Conclusion II follows
(d) if only Conclusion IV follows

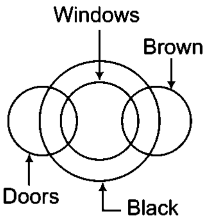
Statements Some doors are windows.
All windows are black.
Some black are brown.

Conclusions I. Some windows are brown.
II. All doors are black.
III. Some doors are black.
IV. No window is brown.

Sol. (*b*)



or



Conclusions I. Some windows are brown. (✗)
II. All doors are black. (✗)
III. Some doors are black. (✓)
IV. No window is brown. (✗)

Complementary pair (I-E)

Practice Corner **8.2**

Build your Confidence...

Directions (Q. Nos. 1-18) In each of the questions below are given three statements followed by two conclusions numbered I and II. You have to take the given statements to be true even if they seem to be at variance from commonly known facts and decide which of the given conclusion(s) logically follow(s) from the three given statements.

Give answer

(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either Conclusion I or II follows
(d) if neither Conclusion I nor II follows
(e) if both Conclusions I and II follow

1. Statements All pens are papers.
Some papers are blades.
All blades are knives. **[SBI (Clerk) 2009]**

Conclusions I. Some knives are papers.
II. Some blades are pens.

2. Statements All fans are televisions.
Some televisions are channels.
Some channels are radios. **[SBI (Clerk) 2009]**

Conclusions I. Some fans are channels.
II. Some radios are televisions.

3. Statements Some roots are stems.
All stems are branches.
All branches are leaves. **[SBI (Clerk) 2009]**

Conclusions I. Some leaves are roots.
II. Some branches are stems.

4. Statements Some computers are machines.
Some machines are boards.
All boards are chalks. **[SBI (Clerk) 2009]**

Conclusions I. Some chalks are computers.
II. No chalk is computer.

5. Statements Some locks are keys.
All keys are metals.
Some metals are cards. **[SBI (Clerk) 2009]**

Conclusions I. Some cards are keys.
II. Some metals are locks.

6. Statements Some bricks are gates.
Some gates are roofs.
All tyres are bricks.

Conclusions I. Some tyres are gates.
II. No gate is a tyre.

7. Statements All desks are benches.
No bench is a chair.
All chairs are roads.

Conclusions I. Some roads are chairs.
II. No chair is a desk.

8. Statements All pens are jungles.
All needles are jungles.
All boys are jungles.

Conclusions I. Some needles are pens.
II. Some boys are pens.

9. Statements All stones are tents.
Some tents are stones.
All stones are walls.

Conclusions I. Some walls are stones.
II. Some walls are tents.

10. Statements No table is wood.
Some woods are chairs.
All chairs are stones. **[IBPS (PO) 2012]**

Conclusions I. No stone is table.
II. Some stones are woods.

11. Statements Some fruits are mangoes.
Some mangoes are red.
All red are vegetables. **[IBPS (PO) 2010]**

Conclusions I. No fruit is red.
II. Some fruits are red.

12. Statements All windows are doors.
All entrances are windows.
No gate is a door. **[SBI (Clerk) 2012]**

Conclusions I. Atleast some windows are gates.
II. No gate is an entrance.

13. Statements All letters are black.
All blacks are blue.
All blues are green. **[UTBI (PO) 2010]**

Conclusions I. No letter is green.
II. Most blue are blacks.

14. Statements Some books are pens.
Some pens are pencils.
Some pencils are buttons. **[UTBI (PO) 2010]**

Conclusions I. Some buttons are pens.
II. Some pencils are books.

Directions (Q. Nos. 15-16)

Statements All forces are energies.
All energies are powers.
No power is heat. **[IBPS (PO) 2012]**

15. Conclusions I. Some forces are definitely not powers.
II. No heat is force.

16. Conclusions I. No energy is heat.
II. Some forces being heat is a possibility.

Directions (Q. Nos. 17-18)

Statements No note is a coin.
Some coins are metals.
All plastics are notes. **[IBPS (PO) 2012]**

17. Conclusions I. No coin is plastic.
II. All plastics being metals is a possibility.

18. Conclusions I. No metal is plastic.
II. All notes are plastics.

Directions (Q. Nos. 19-38) In each of the questions below are given three statements followed by three conclusions numbered I, II and III. You have to take the given statements to be true even, if they seems to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

19. Statements Some carrots are brinjals.
Some brinjals are apples.
All apples are bananas.
[Dena Bank (PO) 2010]

Conclusions I. Some apples are carrots.
II. Some bananas are brinjals.
III. Some bananas are carrots.

(a) Only I follows
(b) Only II follows
(c) Only III follows
(d) Either II or III follows
(e) None of these

20. Statements All keys are locks.
All locks are bangles.
All bangles are cars. **[Dena Bank (PO) 2010]**

Conclusions I. Some cars are locks.
II. Some bangles are keys.
III. Some cars are keys.

(a) Only I follows
(b) I and II follow
(c) I and III follow
(d) II and III follow
(e) All I, II and III follow

21. Statements All fruits are leaves.
Some leaves are trees.
No tree is house. **[Dena Bank (PO) 2010]**

Conclusions I. Some houses are fruits.
II. Some trees are fruits.
III. No house is a fruit.

(a) Only I follows (b) Only II follows
(c) Only III follows (d) Either I or III follows
(e) None follows

22. Statements All tables are mirrors.
Some mirrors are chairs.
All chairs are glasses. **[Dena Bank (PO) 2010]**

Conclusions I. Some glasses are mirrors.
II. Some chairs are tables.
III. Some mirrors are tables.

(a) I and II follow (b) II and III follow
(c) I and III follow (d) All I, II and III follow
(e) None of these

23. Statements All calculators are boxes.
All boxes are taps.
Some taps are machines.
[Dena Bank (PO) 2010]

Conclusions I. Some machines are boxes.
II. Some taps are calculators.
III. Some boxes are calculators.

(a) I and II follow
(b) I and III follow
(c) II and III follow
(d) All I, II and III follow
(e) None of the above

24. Statements Some books are papers.
Some papers are desks.
Some desks are chairs. **[UCO Bank (PO) 2008]**

Conclusions I. Some books are desks.
II. Some papers are chairs.
III. Some books are chairs.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only III follows
(e) I and II follow

25. Statements Some pots are buckets.
All buckets are tubs.
All tubs are drums. **[UCO Bank (PO) 2008]**

Conclusions I. Some drums are pots.
II. All tubs are buckets.
III. Some drums are buckets.

(a) I and II follows (b) I and III follow
(c) II and III follow (d) All follow
(e) None of these

26. Statements All pins are bags.
All chalks are bags.
All needles are bags.

Conclusions I. Some needles are pins.
II. Some chalks are needles.
III. No needle is pin. **[UCO Bank (PO) 2008]**

(a) Only I follows (b) Only III follows
(c) Either I or III follows (d) Either I or III and II follow
(e) None of these

27. Statements Some buses are trucks.
Some trucks are boats.
No boat is jeep. **[UCO Bank (PO) 2008]**

Conclusions I. Some jeeps are buses.
II. Some boats are buses.
III. Some jeeps are trucks.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only III follows
(e) II and III follow

28. Statements All flowers are trees.
All trees are jungles.
No jungle is hill. **[Andhra Bank (PO) 2008]**

Conclusions I. No flower is hill.
II. No tree is hill.
III. Some jungles are flowers.

(a) None follows
(b) I and II follow
(c) I and III follow
(d) II and III follow
(e) All I, II and III follow

29. Statements Some uniforms are covers.
All covers are papers.
All papers are bags. **[CMAT 2013]**

Conclusions I. All covers are bags.
II. Some bags are covers, papers and uniforms.
III. Some uniforms are not papers.

(a) Only I follows
(b) I and II follow
(c) Only III follow
(d) All I, II and III follow

30. Statements All buildings are mirrors.
Some mirrors are pens.
No pen is paper. **[Syndicate Bank (PO) 2009]**

Conclusions I. Some papers are buildings.
II. Some pens are buildings.
III. Some papers are mirrors.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only III follows
(e) II and III follow

31. Statements Some books are trees.
All trees are roads.
Al roads are wheels.
[Syndicate Bank (PO) 2009]

Conclusions I. Some wheels are books.
II. Some roads are books.
III. Some wheels are trees.

(a) I and II follow
(b) II and III follow
(c) I and III follow
(d) All follow
(e) None of the above

32. Statements All stones are rivers.
All rivers are cars.
Some cars are trains. **[IDBI Bank (PO) 2009]**

Conclusions I. Some trains are stones.
II. Some cars are stones.
III. Some trains are rivers.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only III follows
(e) II and III follow

33. Statements Some bags are plates.
Some plates are chairs.
All chairs are tables.
[Allahabad Bank (PO) 2009]

Conclusions I. Some tables are plates.
II. Some chairs are bags.
III. No chair is bag.

(a) Only I follows
(b) Either II or III follows
(c) I and either II or III follow
(d) Only III follows
(e) None of the above

34. Statements All desks are rooms.
Some rooms are halls.
All halls are leaves.
[Allahabad Bank (PO) 2009]

Conclusions I. Some leaves are desks.
II. Some halls are desks.
III. Some leaves are rooms.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only III follows
(e) II and III follow

35. Statements Some doors are windows.
Some windows are lamps.
All lamps are candles.
[Andhra Bank (PO) 2009]

Conclusions I. Some candles are doors.
II. Some candles are windows.
III. Some lamps are doors.

(a) Only I follows
(b) Only II follows
(c) Only III follows
(d) I and II follow
(e) None of the above

36. Statements Some towns are villages.
Some villages are lanes.
Some lanes are hamlets.
[Andhra Bank (PO) 2009]

Conclusions I. Some hamlets are villages.
II. Some lanes are towns.
III. Some hamlets are towns.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only III follows
(e) I and II follow

37. Statements Some towns are villages.
Some villages are lanes.
Some lanes are hamlets.
[Andhra Bank (PO) 2009]

Conclusions I. Some hamlets are villages.
II. Some lanes are towns.
III. Some hamlets are towns.

(a) Only III follows
(b) Only I follows
(c) Only II follows
(d) None follows
(e) I and III follow

38. Statements All buildings are mirrors.
Some mirrors are pens.
No pen is paper. **[CMAT 2013]**

Conclusions I. Some papers are buildings.
II. Some pens are buildings.
III. Some papers are mirrors.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only III follows

Directions (Q. Nos. 39-50) In each of the questions below are given three statements followed by four conclusions numbered I, II, III and IV. You have to take the given statements to be true even, if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusion(s) logically follow(s) from the given statements disregarding commonly known facts.

39. Statements Some dogs are rats.
All rats are trees.
Some trees are not dogs.

Conclusions I. Some trees are dogs.
II. All dogs are trees.
III. All rats are dogs.
IV. No tree is dog.

(a) None follows
(b) Only I follows
(c) I and II follow
(d) II and III follow
(e) All follow

40. Statements All peacocks are lions.
Some tigers are peacocks.

Conclusions I. Some lions are not tiger.
II. All tigers are lions.
III. Some tigers are lions.
IV. All peacocks are tigers.

(a) Only I follows
(b) Only II follows
(c) Only III follows
(d) Only IV follows

41. Statements All bricks are flowers.
Some houses are flowers.
All pens are houses.

Conclusions I. Some houses are bricks.
II. Some pens are flowers.
III. Some flowers are bricks.
IV. No pen is flower.

(a) Either II or IV and III follow
(b) Either II or IV and I follow
(c) Either I or III and IV follow
(d) None follows
(e) All follow

42. Statements Some dogs are rats.
All rates are trees.
Some trees are not dogs. **[CMAT 2013]**

Conclusions I. Some trees are dogs.
II. All dogs are trees.
III. All rats are dogs.
IV. No tree is dog.

(a) None follow
(b) Only I follows
(c) I and II follow
(d) II and III follow

43. Statements All rocks are balls.
Some balls are rings.
Al rings are stones. **[UCO Bank (PO) 2008]**

Conclusions I. Some stones are rocks.
II. Some rings are rocks.
III. Some balls are rocks.
IV. No stone is rock.

(a) I and III follow
(b) III and IV follow
(c) Either I or IV and III follow
(d) Either I or IV follows
(e) None of these

44. Statements All books are papers.
All pencils are papers.
All tables are papers. **[UCO Bank (PO) 2008]**

Conclusions I. Some books are pencils.
II. Some pencils are tables.
III. Some tables are books.
IV. Some papers are tables.

(a) Only I follows
(b) Only II follows
(c) Only III follows
(d) Only IV follows
(e) None of these

45. Statements Some desks are mirrors.
Some mirrors are combs.
Some combs are pins. **[UCO Bank (PO) 2008]**

Conclusions I. Some pins are desks.
II. Some combs are desks.
III. Some pins are mirrors.
IV. Some pins are either desks or mirrors.

(a) None follows
(b) Only II follows
(c) Only I follows
(d) Only IV follows
(e) Only III follows

46. Statements All blades are hammers.
All hammers are rods.
All rods are buckets. **[UCO Bank (PO) 2008]**

Conclusions I. Some buckets are hammers.
II. Some rods are blades.
III. All hammers are buckets.
IV. All blades are rods.

(a) I and II follow
(b) II and III follow
(c) I, II and III follow
(d) II, III and IV follow
(e) All follow

47. Statements All trees are chairs.
No chair is flower.
Some flowers are bangles.
[UCO Bank (PO) 2008]

Conclusions I. No tree is bangle.
II. No chair is bangle.
III. Some flowers are trees.
IV. Some bangles are trees.

(a) None follows
(b) Either I or IV follows
(c) Either II or III follows
(d) I and II follow
(e) III and IV follow

48. Statements Some boys are girls.
No men are cycles.
All girls are men.

Conclusions I. Some boys are men.
II. Some boys are cycles.
III. Some boys are not cycles.
IV. No cycle is girl.

(a) I and III follow
(b) III and IV follow
(c) II and IV follow
(d) II, III and IV follow
(e) I, III and IV follow

49. Statements Some motors are books.
Some scooters are motors.
All girls are scooters.

Conclusions I. Some girls are motors.
II. Some girls are books.
III. Some scooters are girls.
IV. No girl is a book.

(a) I and III follow
(b) II and III follow
(c) I and II follow
(d) I, II and III follow
(e) Either II or IV and III follow

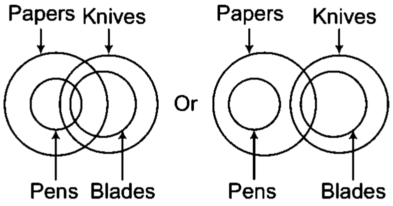
50. Statements All dogs are rats.
All rats are crows.
All crows are parrots.

Conclusions I. All dogs are parrots.
II. Some parrots are dogs.
III. Some crows are dogs.
IV. All rats are dogs.

(a) I and II follow
(b) I, II and III follow
(c) Either II or IV follow
(d) Either I or II and III follow

Response & Interpretations **(8.2)**

1. (*a*) **Method I**

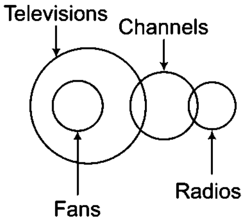


I. Some knives are papers (✓)
II. Some blades are pens (✗)

Method II

Solution by using mediate / immediate inference table.
All pens are papers. (A-type)
Some papers are blades. (I-type)
All blades are knives. (A-type)
From Statements 2 and 3,
I + A = I-type conclusion
Some papers are knives $\xrightarrow{\text{Conversion}}$ Some knives are papers = Conclusion I
From Statements 1 and 2,
A + I = Not a valid conclusion
Hence, Conclusion II does not follow.
So, only Conclusions I follows.

2. (*d*) **Method I**

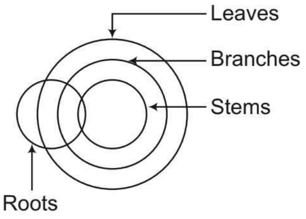


I. Some fans are channels. (✗)
II. Some radios are televisions. (✗)

Method II

All fans are televisions, (A-type)
Some televisions are channels. (I-type)
Some channels are radios. (I-type)
From Statements 1 and 2.
A + I = Not a valid conclusion
Hence, Conclusion I does not follows
From Statements 2 and 3,
I + I = Not a valid conclusion
Hence, Conclusion II does not follow.
So, both Conclusions I and II does not follow.

3. (*e*) **Method I**



I. *Some leaves are roots* (✓)
II. Some branches are stems (✓)

Method II

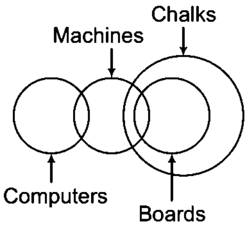
Some roots are stems. (I-type)
All stems are branches. (A-type)
All branches are leaves. (A-types)
From Statements 1, 2 and 3,
(I + A) + A = I + A = I -type conclusion
Some roots are leaves $\xrightarrow{\text{Conversion}}$ Some leaves are roots = Conclusion I

From Statement 2,

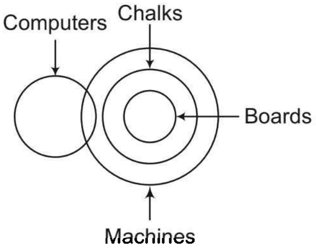
All stems are branches $\xrightarrow{\text{Conversion}}$ Some branches are stems = Conclusion II

Hence, both Conclusions I and II follow.

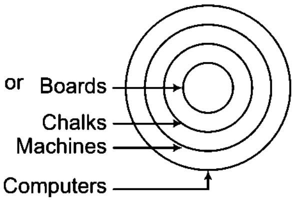
4. (*c*) **Method I**


Machines
Chalks
Computers
Boards

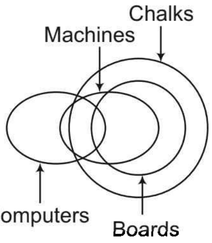
or


Computers
Chalks
Boards
Machines

or


Boards
Chalks
Machines
Computers

or


Chalks
Machines
Computers
Boards

I. Some chalks are computers. (✗)
II. No chalk is a computer. (✗)

Complementary pair (I-E)

Method II

Some computers are machines. (I-type)
Some machines are boards. (I-type)
All boards are chalks. (A-type)

From Statements 1, 2 and 3,

$\underbrace{(I + I)}_{\text{Invalid}} + A$ = Not valid conclusion

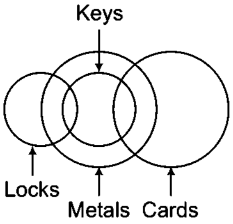
Hence, Conclusion I does not follow.

So, Conclusion II is invalid.

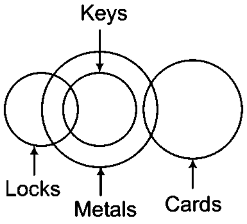
But Conclusions I and II have same subject and predicate. Therefore, they forms (E-I) complementary pair.

Hence, either I or II follows.

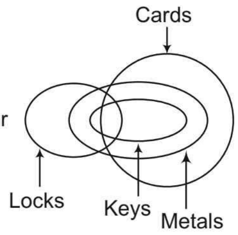
5. (*b*) **Method I**


Keys
Locks
Metals
Cards

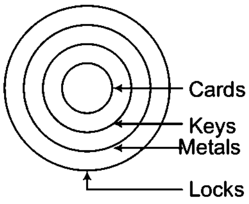
or


Keys
Locks
Metals
Cards

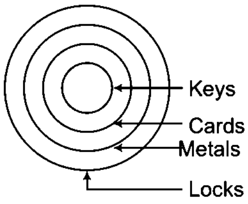
or


Cards
Locks
Keys
Metals

or


Cards
Keys
Metals
Locks

or


Keys
Cards
Metals
Locks

I. Some cards are keys. (✗)
II. Some metals are locks. (✓)

Method II

Some locks are keys. (I-type)
All keys are metals. (A-type)
Some metals are cards (I-type)

From Statements 2 and 3,

A + I = Not a valid conclusion

Hence, Conclusion I does not follow.

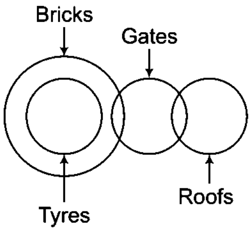
From Statements 1 and 2,

I + A = I-type conclusion

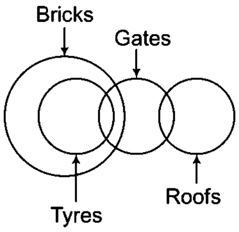
Some locks are metals $\xrightarrow{\text{Conversion}}$ Some metals are locks = Conclusion II

Hence, only Conclusion II follows.

6. (*c*) **Method I**


Bricks
Gates
Tyres
Roofs

or


Bricks
Gates
Tyres
Roofs

I. Some tyres are gates (✗)
II. No gate is a tyre. (✗)

Complementary pair (I-E)

Method II

Some bricks are gates.

Some gates are roofs.

All tyres are bricks.

Aligning the above statement following IEA rule.

All tyres are bricks. (A-type)
Some bricks are gates. (I-type)
Some gates are roofs. (I-type)

From Statements 1 and 2,

A + I = Not a valid conclusion

Hence, Conclusion I is invalid.

Conclusion II is also invalid.

But from Conclusion I,

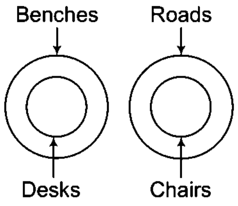
Some tyres are gates $\xrightarrow{\text{Conversion}}$ Some gates are tyres.

and from Conclusion II, No gate is tyre.

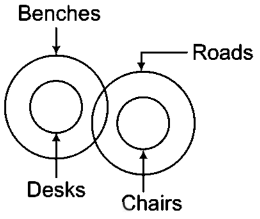
Since, both subject and predicate of Conclusions I and II are same, they form (I-E) complementary pair.

Hence, either Conclusion I or II follows.

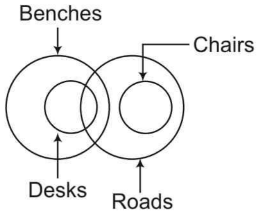
7. (*e*) **Method I**


Benches
Roads
Desks
Chairs

or


Benches
Roads
Desks
Chairs

or


Benches
Chairs
Desks
Roads

I. Some roads are chairs. (✓)
II. No chair is a desk. (✓)

Method II

All desks are benches. (A-type)
No bench is a chair. (E-type)
All chairs are roads. (A-type)

From Statement 3,

All chairs are roads $\xrightarrow{\text{Conversion}}$ Some roads are chairs

= Conclusion I

From Statements 1 and 2,

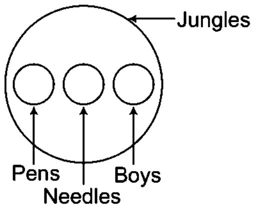
A + E = E-type conclusion

No desk is a chair $\xrightarrow{\text{Conversion}}$ No chair is desk

= Conclusion II

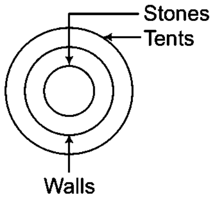
Hence, both Conclusions I and II follow.

8. (*d*)

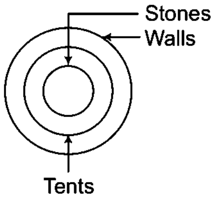

Jungles
Pens
Needles
Boys

I. Some needles are pens. (✗)
II. Some boys are pens. (✗)

9. (*e*)

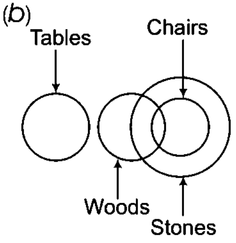

Stones
Tents
Walls

or

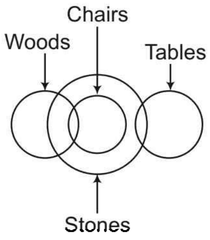

Stones
Walls
Tents

I. Some walls are stones. (✓)
II. Some walls are tents. (✓)

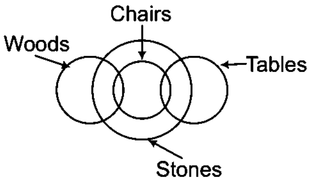
10. (*b*)


Tables
Chairs
Woods
Stones

or

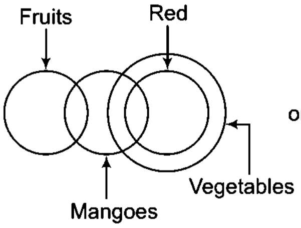

Chairs
Woods
Tables
Stones

or

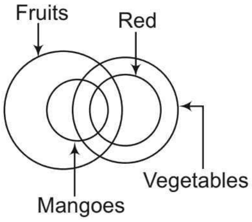

Chairs
Woods
Tables
Stones

I. No stone is table. (✗)
II. Some stones are woods. (✓)

11. (*c*)


Fruits
Red
Vegetables
Mangoes

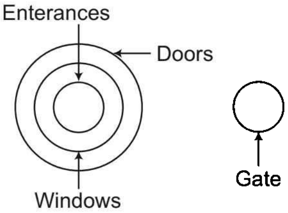
or


Fruits
Red
Vegetables
Mangoes

I. No fruit is red. (✗)
II. Some fruits are red. (✗)

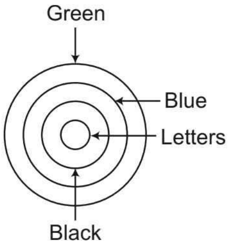
Complementary pair (E-I)

12. (*b*)


Enterances
Doors
Windows
Gate

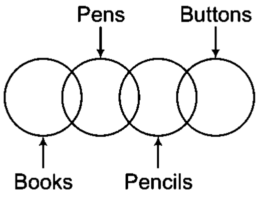
I. Atleast some windows are gates. (✗)
II. No gate is an entrance. (✓)

13. (*b*)


Green
Blue
Letters
Black

I. No letter is green. (✗)
II. Most blue are blacks. (✓)

14. (*d*) **Method I**


Pens
Buttons
Books
Pencils

I. Some buttons are pens. (✗)
II. Some pencils are books. (✗)

Method II

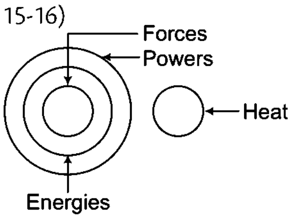
Some books are pens. (I-type)
Some pens are pencils. (I-type)
Some pencils are buttons. (I-type)

From Statements 2 and 3,

I + I = Not a valid statement

Hence, Conclusion I is invalid.
From Statements 1 and 2,
I + I = Not a valid statement.
Hence, Conclusion II is invalid.
So, Conclusions I and II does not follow.

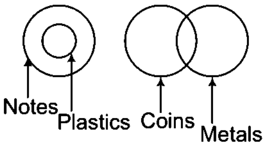
Solutions (Q. Nos. 15-16)


Forces
Powers
Heat
Energies

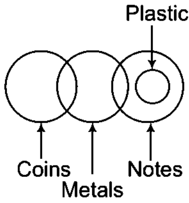
15. (*b*) **Conclusions** I. Some forces are definitely not powers. (✗)
II. No heat is force. (✓)

16. (*a*) **Conclusions** I. No energy is heat. (✓)
II. Some forces being heat is a possibility. (✗)

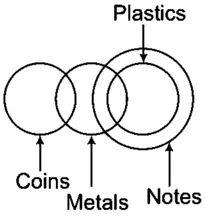
Solutions (Q. Nos. 17-23)


Notes
Plastics
Coins
Metals

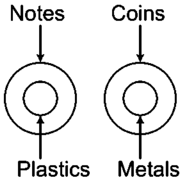
or


Plastics
Coins
Metals
Notes

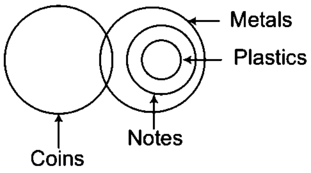
or


Plastics
Coins
Metals
Notes

or


Notes
Coins
Plastics
Metals

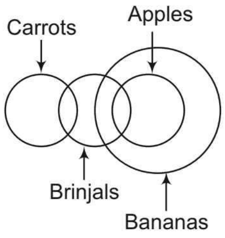
or


Metals
Plastics
Coins
Notes

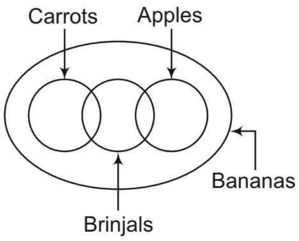
17. (*e*) **Conclusions** I. No coin is plastic. (✓)
II. All plastics being metals is a possibility. (✓)

18. (*d*) **Conclusions** I. No metal is plastic. (✗)
II. All notes are plastics. (✗)

19. (*b*)

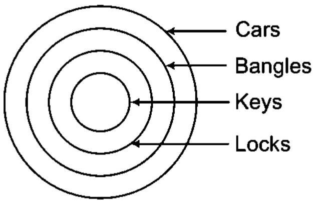

Carrots
Apples
Brinjals
Bananas

or


Carrots
Apples
Bananas
Brinjals

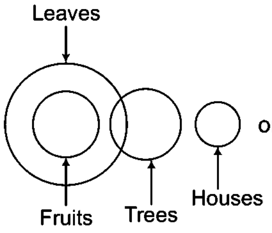
I. Some apples are carrots. (✗)
II. Some bananas are brinjals. (✓)
III. Some bananas are carrots. (✗)

20. (*e*)

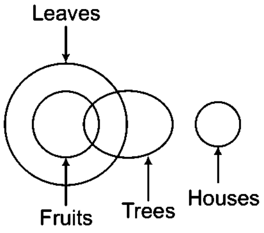

Cars
Bangles
Keys
Locks

I. Some cars are locks. (✓)
II. Some bangles are keys. (✓)
III. Some cars are keys. (✓)

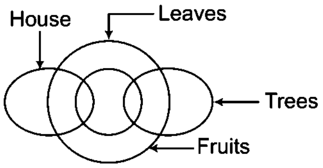
21. (*d*)


Leaves
Fruits
Trees
Houses

or

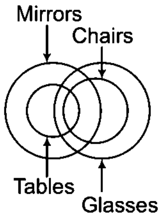

Leaves
Fruits
Trees
Houses

or

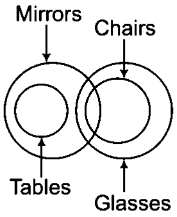

House
Leaves
Trees
Fruits

I. Some houses are fruits. (✗)
II. Some trees are fruits. (✗)
III. No house is a fruit. (✗)
Complementary pair (I-E)

22. (*c*)

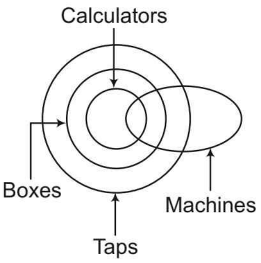

Mirrors
Chairs
Tables
Glasses

or

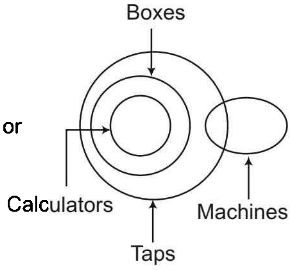

Mirrors
Chairs
Tables
Glasses

I. Some glasses are mirrors. (✓)
II. Some chairs are tables. (✗)
III. Some mirrors are tables. (✓)

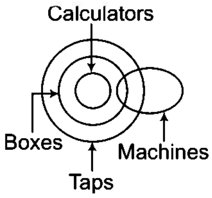
23. (*c*)


Calculators
Boxes
Machines
Taps

or

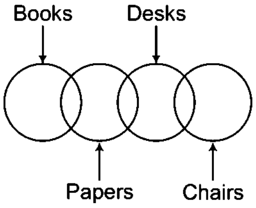

Boxes
Calculators
Machines
Taps

or


Calculators
Boxes
Machines
Taps

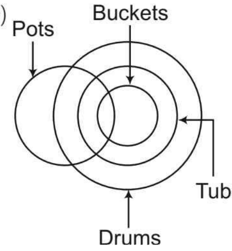
I. Some machines are boxes. (✗)
II. Some taps are calculators. (✓)
III. Some boxes are calculators. (✓)

24. (*a*)


Books
Desks
Papers
Chairs

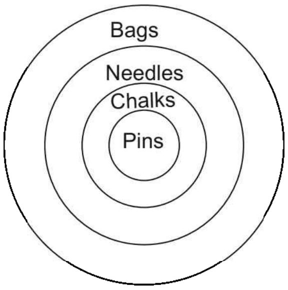
Conclusions I. Some books are desks. (✗)
II. Some papers are chairs. (✗)
III. Some books are chairs. (✗)

25. (*b*)


Pots
Buckets
Tubs
Drums

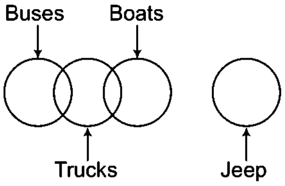
Conclusions I. Some drums are pots. (✓)
II. All tubs are buckets. (✗)
III. Some drums are buckets. (✓)

26. (*c*)


Bags
Needles
Chalks
Pins

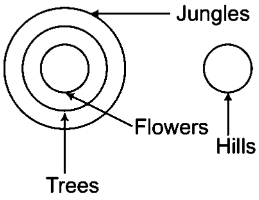
Conclusions I. Some needles are pins. (✗)
II. Some chalks are needles. (✗)
III. No needle is a pin (✗)
Complimentary pair (I-E)

27. (*a*)


Buses
Boats
Trucks
Jeep

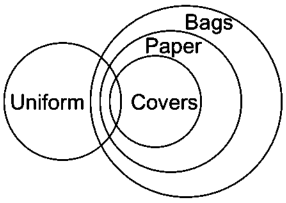
Conclusions I. Some jeeps are buses. (✗)
II. Some boats are buses. (✗)
III. Some jeeps are trucks. (✓)

28. (*e*)


Jungles
Flowers
Hills
Trees

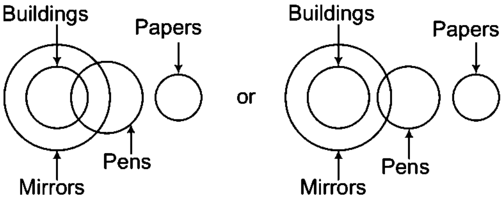
Conclusions I. No flower is hill. (✓)
II. No tree is hill. (✓)
III. Some jungles are flowers. (✓)

29. (*b*)


Bags
Paper
Uniform
Covers

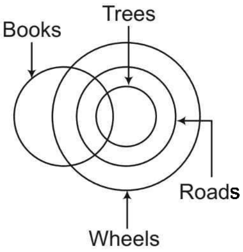
Conclusions I. All covers are bags. (✓)
II. Some bags are covers, papers and uniforms. (✓)
III. Some uniforms are not papers. (✗)

30. (*a*)


Buildings
Papers
Mirrors
Pens
or
Buildings
Papers
Mirrors
Pens

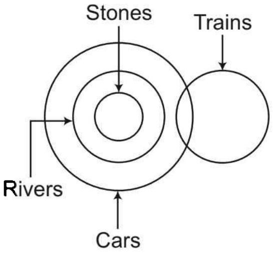
Conclusions I. Some papers are buildings. (✗)
II. Some pens are buildings. (✗)
III. Some papers are mirrors. (✗)

31. (*d*)


Books
Trees
Roads
Wheels

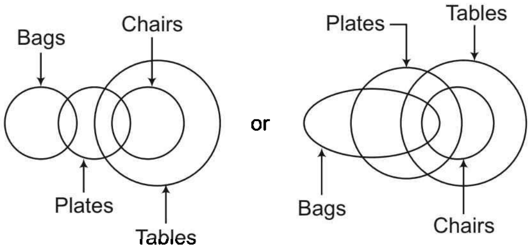
Conclusions I. Some wheels are books. (✓)
II. Some roads are books. (✓)
III. Some wheels are trees. (✓)

32. (*c*)


Stones
Trains
Rivers
Cars

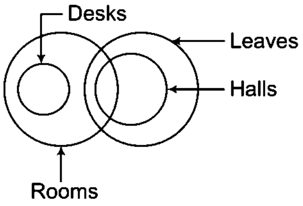
Conclusions I. Some trains are stones. (✗)
II. Some cars are stones. (✓)
III. Some trains are rivers. (✗)

33. (*c*)


Bags
Chairs
Plates
Tables
or
Plates
Tables
Bags
Chairs

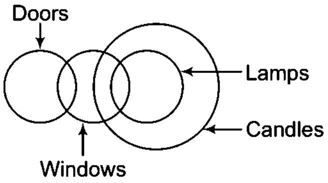
Conclusions I. Some tables are plates. (✓)
II. Some chairs are bags. (✗)
III. No chair is bag. (✗)
Complementary pair (I-E)

34. (*d*)


Desks
Leaves
Halls
Rooms

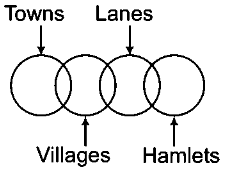
Conclusions I. Some leaves are desks. (✗)
II. Some halls are desks. (✗)
III. Some leaves are rooms. (✓)

35. (*b*)


Doors
Lamps
Candles
Windows

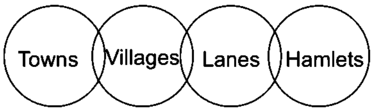
Conclusions I. Some candles are doors. (✗)
II. Some candles are windows. (✓)
III. Some lamps are doors. (✗)

36. (*a*)


Towns
Lanes
Villages
Hamlets

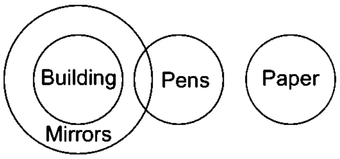
Conclusions I. Some hamlets are villages. (✗)
II. Some lanes are towns. (✗)
III. Some hamlets are towns. (✗)

37. (*d*)


Towns
Villages
Lanes
Hamlets

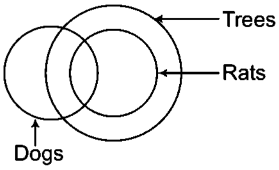
Conclusions I. Some hamlets are villages. (✗)
II. Some lanes are towns. (✗)
III. Some hamlets are towns. (✗)

38. (*a*)


Building
Pens
Paper
Mirrors

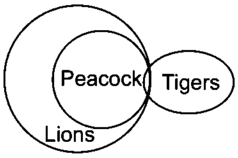
Conclusions I. Some papers are buildings. (✗)
II. Some pens are buildings. (✗)
III. Some papers are mirrors. (✗)

39. (*b*)


Trees
Rats
Dogs

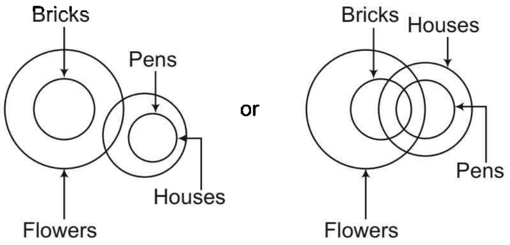
Conclusions I. Some trees are dogs. (✓)
II. All dogs are trees. (✗)
III. All rats are dogs. (✗)
IV. No tree is dog. (✗)

40. (*c*)


Peacock
Tigers
Lions

Conclusions I. Some lions are not tiger. (✗)
II. All tigers are lions. (✗)
III. Some tigers are lions. (✓)
IV. All peacocks are tigers. (✗)

41. (*a*) **Method I**


Bricks
Pens
Houses
Flowers
or
Bricks
Houses
Pens
Flowers

Conclusions I. Some houses are bricks. (✗)
II. Some pens are flowers. (✗)
III. Some flowers are bricks. (✓)
IV. No pen is flower. (✗)

Complementary pair (I-E)

Method II

All bricks are flowers.

Some houses are flowers.

All pens are houses.

Aligning the above statements using IEA rule.

All bricks are flowers. (A-type)
Some flowers are houses. (I-type)
Some houses are persons. (I-type)

From Statements 1 and 2,

A + I = Not a valid conclusion

Hence, Conclusion I does not follow.

From Statements 2 and 3,

I + I = Not a valid conclusion

So, Conclusion II does not follow from Statement 1.

All bricks are flowers $\xrightarrow{\text{Conversion}}$

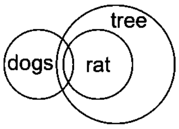
Some flowers are bricks.

Conclusion III and Conclusion II is invalid.

But Conclusions II and IV have both subject and predicate same, hence form (I–E) complementary pair.

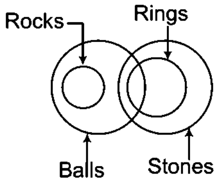
Hence, either II or IV and III follow.

42. (*b*)

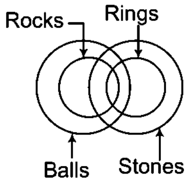

tree
dogs
rat

Conclusions I. Some trees are dogs. (✓)
II. All dogs are trees. (✗)
III. All rats are dogs. (✗)
IV. No tree is dog. (✗)

43. (c)

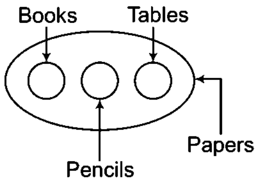

Rocks
Rings
Balls
Stones

or

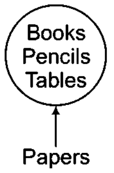

Rocks
Rings
Balls
Stones

Conclusions I. Some stones are rocks. (✗)
II. Some rings are rocks. (✗)
III. Some balls are rocks. (✓)
IV. No stone is rock. (✗)
Complementary pair (I-E)

44. (d)

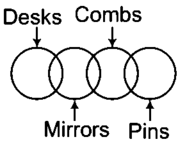

Books
Tables
Papers
Pencils

or


Books
Pencils
Tables
Papers

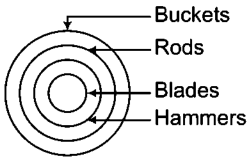
Conclusions I. Some books are pencils. (✗)
II. Some pencils are tables. (✗)
III. Some tables are books. (✗)
IV. Some papers are tables. (✓)

45. (a)


Desks
Combs
Mirrors
Pins

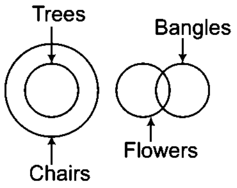
Conclusions I. Some pins are desks. (✗)
II. Some combs are desks. (✗)
III. Some pins are mirrors. (✗)
IV. Some pins are either desks or mirrors. (✗)

46. (e)

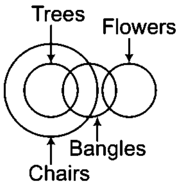

Buckets
Rods
Blades
Hammers

Conclusions I. Some buckets are hammers. (✓)
II. Some rods are blades. (✓)
III. All hammers are buckets. (✓)
IV. All blades are rods. (✓)

47. (a)

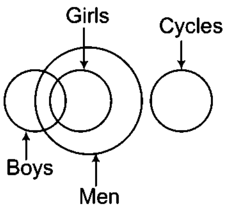

Trees
Bangles
Flowers
Chairs

or

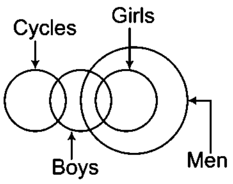

Trees
Flowers
Bangles
Chairs

Conclusions I. No tree is bangle. (✗)
II. No chair is bangle. (✗)
III. Some flowers are trees. (✗)
IV. Some bangles are trees. (✗)
Complementary pair (E-I)

48. (e)

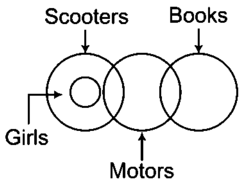

Girls
Cycles
Boys
Men

or

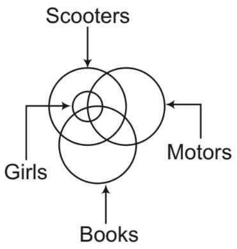

Cycles
Girls
Boys
Men

Conclusions I. Some boys are men. (✓)
II. Some boys are cycles. (✗)
III. Some boys are not cycles. (✓)
IV. No cycle is girl. (✓)

49. (e) **Method I**

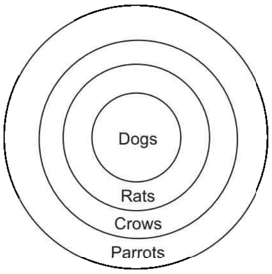

Scooters
Books
Girls
Motors

or


Scooters
Motors
Girls
Books

Conclusions I. Some girls are motors. (✗)
II. Some girls are books. (✗)
III. Some scooters are girls. (✓)
IV. No girl is book. (✗)
Complementary pair (I-E)
Method II
Some motors are books.
Some scooters are motors.
All girls are scooters.
Aligning the above statement by using IEA rule.
All girls are scooters. (A-type)
Some scooters are motors. (I-type)
Some motors are books. (I-type)
From Statements 1 and 2,
A + I = Not a valid conclusion
Hence, Conclusion I does not follow.
From Statements 1, 2 and 3,
$\underbrace{A + I}_{\text{Invalid}} + I$ = Not a valid conclusion
Hence, Conclusion II does not follow.
From Statement 1,
All girls are scooter $\xrightarrow{\text{Conversion}}$ Some scooter are girls.
Conclusion III
Hence, Conclusion III follows.
Conclusion IV is invalid.
But Conclusions II and IV have same subject and predicate and hence form (I-E) complementary pair.
So, either II or IV and III follow.

50. (b)


Dogs
Rats
Crows
Parrots

Conclusions I. All dogs are parrots. (✓)
II. Some parrots are dogs. (✓)
III. Some crows are dogs. (✓)
IV. All rats are dogs. (✗)

Type 3 Four Statements and Two or More Conclusions

In this type of questions, four statements and some conclusions are given and the candidates are required to check the validity of the conclusions on the basis of the given statements.

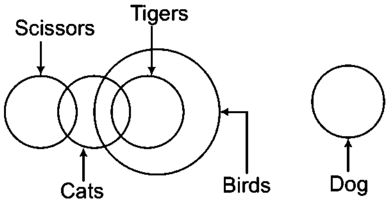
Direction (Example No.9) In the question below are given four statements followed by two Conclusions I and II. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusion(s) logically follow(s) from given statements disregarding commonly known facts.

Give answer
(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either Conclusion I or II follows
(d) if both Conclusions I and II follow
(e) if neither Conclusion I nor II follows

Ex **9** **Statements** Some scissors are cats. All tigers are birds.
Some cats are tigers. No bird is dog. **[Andhra Bank (PO) 2010]**

Conclusions I. Some cats are birds. II. No dog is bird.

Sol. (*d*)



Conclusions I. Some cats are birds. (✓)
II. No dog is bird. (✓)

By using mediate/immediate inferences table,
From second and third statements,
Some cats are tigers. (I-type)
All tigers are birds. (A-type)
I + A = I-type of conclusions = Some cats are birds = Conclusion I
From last statement,

No bird is dog
↓
Conversion
↓
No dog is bird = Conclusion II

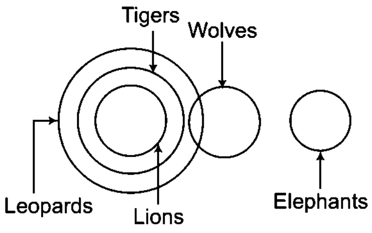
Direction (Example No.10) In the question below are given four statements followed by three Conclusions I, II and III. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusion(s) logically follow(s) from given statements disregarding commonly known facts.

Give answer
(a) Only I follows
(b) Only II follows
(c) Only III follows
(d) I and II follow

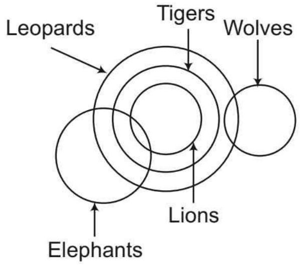
***Ex* 10** **Statements** All lions are tigers. All tigers are leopards.
Some leopards are wolves. No wolf is elephant.

Conclusions I. No elephant is lion. II. Some wolves are lions. III. Some leopards are lions.

Sol. (c)


Tigers
Wolves
Leopards
Lions
Elephants

or


Leopards
Tigers
Wolves
Lions
Elephants

Conclusions I. No elephant is lion. (✗)
II. Some wolves are lions. (✗)
III. Some leopards are lions. (✓)

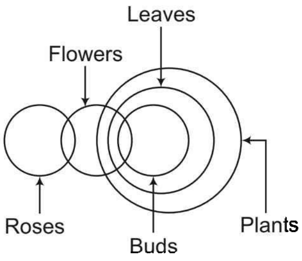
Direction (Example No. 11) In the question below are given four statements followed by four Conclusions I, II, III and VI. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusion(s) logically follow(s) from given statements disregarding commonly known facts.

Give answer
(a) Only I follows
(b) I and II follow
(c) I and either II or IV follow
(d) Either II or IV follows

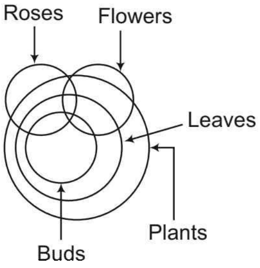
***Ex* 11** **Statements** Some roses are flowers. Some flowers are buds.
All buds are leaves. All leaves are plants. **[IDBI (PO) 2013]**

Conclusions I. Some plants are flowers. II. Some roses are buds.
III. No leaves are roses. IV. No roses are buds.

Sol. (c)


Leaves
Flowers
Roses
Buds
Plants

or


Roses
Flowers
Leaves
Plants
Buds

Conclusions I. Some plants are flowers. (✓)
II. Some roses are buds. (✗)
III. No leaves are roses. (✗)
IV. No roses are buds. (✗)
Complementary pair (I-E)

Practice Corner **8.3**

Build your Confidence...

Directions (Q. Nos. 1-12) In each question below are four statements followed by two conclusions numbered I and II. You have to take the four given statements to be true even if they seem to be at variance with commonly known facts and then decide which of the given conclusions logically follows from the four statements disregarding commonly known facts.

Give answer

(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either Conclusion I or II follows
(d) if neither Conclusion I nor II follows
(e) if both Conclusions I and II follow

1. Statements Some schools are colleges.
Some colleges are universities.
All universities are institutes.
All institutes are classes.
[Allahabad Bank (PO) 2008]

Conclusions I. Some colleges are classes.
II. All universities are classes.

2. Statements Some umbrellas are raincoats.
All raincoats are shirts.
No shirt is a blazer.
Some blazers are suits.
[Allahabad Bank (PO) 2008]

Conclusions I. Some shirts are umbrellas.
II. Some suits are raincoats.

3. Statements Some computers are boards.
Some boards are chalks.
All chalks are bulbs.
No bulb is tubelight.

Conclusions I. Some bulbs are computers.
II. No chalk is a tubelight.

4. Statements All doors are floors.
Some floors are tiles.
All tiles are paints.
Some paints are stones.
[Andhra Bank (PO) 2008]

Conclusions I. Some floors are paints.
II. Some doors are tiles.

5. Statements Some leaves are petals.
Some petals are flowers.
All flowers are fruits.
Some fruits are nuts. **[Andhra Bank (PO) 2008]**

Conclusions I. Some nuts are flowers.
II. No nut is flower.

6. Statements All pictures are paintings.
All paintings are photographs.
Some photographs are designs.
Some designs are movies.
[Andhra Bank (PO) 2008]

Conclusions I. Some paintings are designs.
II. Some photographs are movies.

7. Statements Some tablets are capsules.
All capsules are syrups.
Some syrups are medicines.
All medicines are powders.
[Andhra Bank (PO) 2008]

Conclusions I. Some syrups are powders.
II. Some syrups are tablets.

8. Statements All jungles are trees.
All trees are roads.
All roads are houses.
All houses are buildings. **[LIC (ADO) 2007]**

Conclusions I. All trees are houses.
II. Some buildings are roads.

9. Statements All tablets are packets.
No packet is bag.
Some bags are toys.
All toys are puppets. **[LIC (ADO) 2007]**

Conclusions I. Some puppets are tablets.
II. Some puppets are bags.

10. Statements Some desks are tables.
Some tables are chairs.
Some chairs are benches.
Some benches are cots. **[LIC (ADO) 2007]**

Conclusions I. Some chairs are desks.
II. Some cots are tables.

11. Statements All bangles are rings.
All rings are bracelets.
Some bracelets are jewels.
Some jewels are stones. **[LIC (ADO) 2007]**

Conclusions I. Some stones are bangles.
II. Some jewels are rings.

12. Statements All trousers are pants.
Some pants are shirts.
All shirts are buttons.
Some buttons are threads. **[LIC (ADO) 2007]**

Conclusions I. Some threads are pants.
II. Some buttons are trousers.

Directions (Q. Nos. 13-28) In each of the questions below are given four statements followed by three conclusions numbered I, II, and III. You have to take the given statements to be true even, if they seem to be at variance with commonly known facts. Read all the conclusion(s) and then decide which of the given conclusions logically follow(s) from the given statements disregarding commonly known facts.

13. Statements Some pens are sticks.
Some sticks are canes.
All canes are scales.
No scale is weight. **[Canara Bank (PO) 2007]**

Conclusions I. Some sticks are scales.
II. No stick is scale.
III. No cane is weight.

(a) Either I or II follows
(b) I and III follow
(c) Either I or II and III follow
(d) All I, II and III follow
(e) None of these

14. Statements Some folders are boxes.
Some boxes are bags.
All bags are containers.
Some bags are sacks. **[Canara Bank (PO) 2007]**

Conclusions I. No folder is bag.
II. Some boxes are containers.
III. Some sacks are containers.

(a) I and II follow
(b) II and III follow
(c) I and III follows
(d) All follow
(e) None follows

15. Statements Some insects are pests.
All pests are birds.
No bird is amphibian.
All amphibians are animals.
[Canara Bank (PO) 2007]

Conclusions I. No animal is bird.
II. Some insects are birds.
III. No pests are amphibians.

(a) Only I follows
(b) Only II follows
(c) Only III follows
(d) II and III follow
(e) None of these

16. Statements Some shoes are socks.
All socks are towels.
All towels are bedsheets.
No bedsheet is blanket. **[IDBI Bank (PO) 2008]**

Conclusions I. No towel is blanket.
II. Some shoes are towels.
III. Some shoes are bedsheets.

(a) I and II follow
(b) II and III follow
(c) I and III follow
(d) All follow
(e) None of these

17. Statements Some fruits are flowers.
Some flowers are buds.
No bud is leaf.
All leaves are plants. **[IDBI Bank (PO) 2008]**

Conclusions I. No plant is bud.
II. Some plants are flowers.
III. Some buds are fruits.

(a) None follows
(b) Only I follows
(c) II and III follow
(d) Only III follows
(e) None of these

18. Statements Some pearls are gems.
Some gems are diamonds.
All diamonds are rings.
All rings are bangles.
[Punjab & Sindh Bank (PO) 2008]

Conclusions I. Some bangles are rings.
II. All rings are diamonds.
III. All diamonds are bangles.

(a) Only I follows
(b) I and II follow
(c) I and III follow
(d) All follow
(e) None of these

19. Statements All chairs are tables.
All tables are telephones.
All telephones are cell phones.
No cell phone is computer.
[Punjab & Sindh Bank (PO) 2008]

Conclusions I. All cell phones are tables.
II. Some chairs are computers.
III. No chair is computer.

(a) Only I follows
(b) Only II follows
(c) Only III follows
(d) Either II or III follows
(e) None of these

20. Statements Some rocks are hills.
All hills are mountains.
All mountains are rivers.
No river is canal.
[Punjab & Sindh Bank (PO) 2008]

Conclusions I. All rocks are rivers.
II. Some hills are canals.
III. Some rivers are canals.

(a) Only I follows (b) II and III follow
(c) I and III follow (d) Only II follows
(e) None follows

21. Statements Some books are files.
All files are balls.
All balls are plates.
No plate is glass.
[Punjab & Sindh Bank (Clerk) 2011]

Conclusions I. No glass is plate.
II. Some balls are books.
III. All plates are balls.

(a) Only I follows (b) I and III follow
(c) I and II follow (d) None follows
(e) All follow

22. Statements All pens are cats.
All cats are rats.
All rats are snakes.
All snakes are foxes.
[Punjab & Sindh Bank (Clerk) 2011]

Conclusions I. Some snakes are cats.
II. All snakes are rats.
III. Some cats are pens.

(a) None follows (b) All follow
(c) Only II follows (d) I and III follow
(e) None of these

23. Statements Some shirts are pants.
All pants are caps.
All caps are ties.
No tie is socks. **[UBI (PO) 2010]**

Conclusions I. No cap is socks.
II. Some pants are shirts.
III. All caps are pants.

(a) I and II follow (b) Only II follows
(c) Only III follows (d) None follows
(e) All follow

24. Statements All boxes are foxes.
All foxes are schools.
No school is college.
All colleges are markets. **[UBI (PO) 2010]**

Conclusions I. No fox is college.
II. No college is school.
III. No box is fox.

(a) Only I follows (b) Only III follows
(c) I and II follow (d) None follows
(e) All follow

25. Statements Some leaves are flowers.
No flower is fruit.
Some fruits are branches.
Some branches are stems **[OBC (PO) 2007]**

Conclusions I. Some leaves are stems.
II. All leaves are either stems or fruits.
III. All stems are either branches or fruits.

(a) Only I follows
(b) II and III follow
(c) Only III follows
(d) All follow
(e) None follows

26. Statements Some caps are umbrellas.
Some umbrellas are raincoats.
All raincoats are trousers.
All trousers are jackets. **[OBC (PO) 2007]**

Conclusions I. Some raincoats are caps.
II. Some trousers are umbrellas.
III. All raincoats are jackets.

(a) None follows (b) I and II follow
(c) II and III follow (d) I and III follow
(e) None of these

27. Statements Some fans are coolers.
Some coolers are machines.
Some machines are computers.
All computers are televisions.
[OBC (PO) 2007]

Conclusions I. Some televisions are machines.
II. Some machines are fans.
III. No machine is a fan.

(a) None follows
(b) Only I follows
(c) Only either II or III follows
(d) Only I and either II or III follow
(e) All follow

28. Statements All keys are staplers.
All staplers are blades.
Some blades are erasers.
Some erasers are sharpeners.
[OBC (PO) 2007]

Conclusions I. Some sharpeners are keys.
II. All keys are blades.
III. Some erasers are keys.

(a) I and II follow (b) Only I follows
(c) Only II follows (d) All follow
(e) None of these

Directions (Q. Nos. 29-43) In each of the questions below are given four statements followed by four conclusions numbered I, II, III and IV. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusion (s) logically follow (s) from the given statements disregarding commonly known facts.

29. Statements Some trains are cars.
All cars are branches.
All branches are nets.
Some nets are dresses.
[Syndicate Bank (PO) 2010]

Conclusions I. Some dresses are cars.
II. Some nets are trains.
III. Some branches are trains.
IV. Some dresses are trains.

(a) I and III follow
(b) II and III follow
(c) I and IV follow
(d) II, III and IV follow
(e) None of these

30. Statements Some pencils are kites.
Some kites are desks.
All desks are jungles.
All jungles are mountains.
[Syndicate Bank (PO) 2010]

Conclusions I. Some mountains are pencils.
II. Some jungles are pencils.
III. Some mountains are desks.
IV. Some jungles are kites.

(a) I and III follow
(b) I, II and III follow
(c) III and IV follow
(d) II, III and IV follow
(e) None of these

31. Statements All papers are clips.
Some clips are boards.
Some boards are lanes.
All lanes are roads. [Syndicate Bank (PO) 2010]

Conclusions I. Some roads are boards.
II. Some lanes are clips.
III. Some boards are papers.
IV. Some roads are clips.

(a) I and II follow
(b) I and III follow
(c) I, II and III follow
(d) II, III and IV follow
(e) None of these

32. Statements All birds are horses.
All horses are tigers.
Some tigers are lions.
Some lions are monkeys. [PNB (PO) 2010]

Conclusions I. Some tigers are horses.
II. Some monkeys are birds.
III. Some tigers are birds.
IV. Some monkeys are horses.

(a) I and III follow
(b) I, II and III follow
(c) II, III and IV follow
(d) All I, II, III and IV follow
(e) None of these

33. Statements Some benches are walls.
All walls are houses.
Some houses are jungles.
All jungles are roads. [PNB (PO) 2010]

Conclusions I. Some roads are benches.
II. Some jungles are walls.
III. Some houses are benches.
IV. Some roads are houses.

(a) I and II follow
(b) I and III follow
(c) III and IV follow
(d) II, III and IV follow
(e) None of these

34. Statements Some sticks are lamps.
Some flowers are lamps.
Some lamps are dresses.
All dresses are shirts. [PNB (PO) 2010]

Conclusions I. Some shirts are sticks.
II. Some shirts are flowers.
III. Some flowers are sticks.
IV. Some dresses are sticks.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only III follows
(e) Only IV follows

35. Statements Some baskets are glasses.
All glasses are pots.
Some pots are plates.
All plates are cups.

Conclusions I. No glasses are pots.
II. All glasses are baskets.
III. Atleast some pots are baskets.
IV. Some plates being glasses is a possibility.

(a) III and IV follow
(b) Only IV follows
(c) I and II follow
(d) None follows
(e) All follow

36. Statements All potatos are onions.
All onions are grapes.
Some grapes are mangoes.
All mangoes are brinjals.

Conclusions I. Potatos are grapes.
II. Some brinjals being potatos is a possibility.
III. Each potato is grape.
IV. Some potatos are definitely onions.

(a) All follow
(b) None follows
(c) Only IV follows
(d) Follow II, III and IV
(e) Only I follows

37. Statements All bats are cats.
No cat is rat.
All rats are tigers.
Some tigers are fighters.

Conclusions I. Some tigers are cats.
II. Atleast some fighters being rats is a possibility.
III. Atleast some cats are definitely bats.
IV. None of the fighters is rat.

(a) All follow
(b) None follows
(c) Only III follows
(d) I, II and IV follow
(e) II and III follow

38. Statements All snakes are eagles.
Some eagles are rabbits.
All rabbits are birds.
Some birds are animals.
[UCO Bank (PO) 2009]

Conclusions I. Some animals are snakes.
II. Some birds are snakes.
III. Some birds are eagles.
IV. All birds are rabbits.

(a) None follows
(b) Only II follows
(c) Only III follows
(d) Both II and III follow
(e) None of these

39. Statements Some cameras are calculators.
Some calculators are diaries.
All notebooks are diaries.
All diaries are computers.
[UCO Bank (PO) 2009]

Conclusions I. Some notebooks are calculators.
II. Some calculators are computers.
III. All notebooks are computers.
IV. Some diaries are cameras.

(a) None follows
(b) Only II follows
(c) Only III follows
(d) Both II and III follow
(e) None of these

40. Statements Some books are journals.
All journals are papers.
Some papers are cards.
All cards are boards. **[IDBI Bank (PO) 2009]**

Conclusions I. Some papers are books.
II. Some papers are boards.
III. Some boards are journals.
IV. Some boards are books.

(a) I and II follow
(b) Only I follows
(c) I, II and III follow
(d) All follow
(e) None of the above

41. Statements Some grapes are apples.
Some apples are bananas.
All bananas are guavas.
No guava is pomegranate.
[IDBI Bank (PO) 2009]

Conclusions I. No grapes are pomegranates.
II. Some guavas are grapes.
III. Some guavas are apples.
IV. No bananas are pomegranates.

(a) None follows
(b) II and III follow
(c) Either I or III follows
(d) Both III and IV follow
(e) None of the above

42. Statements Some doors are walls.
All walls are floors.
All floors are rooms.
Some rooms are windows.
[IDBI Bank (PO) 2009]

Conclusions I. All walls are rooms.
II. Some rooms are doors.
III. Some rooms are walls.
IV. Some floors are doors.

(a) None follows
(b) I and II follow
(c) II and III follow
(d) II, III and IV follow
(e) All follow

43. Statements Some men are girls.
Some girls are foolish.
All foolish are mads.
Some mads are bads.

Conclusions I. Some girls are definitely mads.
II. Most of the mads are foolish.
III. At least some girls are men.
IV. All foolish except few are girls.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) All follow
(e) II and III follow

Response & Interpretations (8.3)

1. (*e*) **Method I**

Conclusions I. Some colleges are classes. (✓)
II. All universities are classes. (✓)

Method II

Some schools are colleges. (I-type)
Some colleges are universities. (I-type)
All universities are institutes. (A-type)
All institutes are classes. (A-type)

From Statements 2, 3 and 4,
(I + A) + A = I + A = I-type conclusion
∴ Some colleges are classes = Conclusion I
From Statements 3 and 4,
A + A = A-type conclusion
∴ All universities are classes = Conclusion II
Hence, both Conclusions I and II follow.

2. (*a*) **Method I**

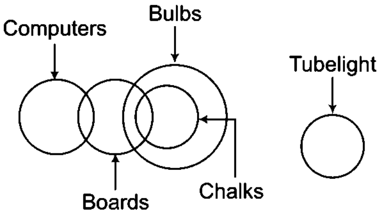
Conclusions I. Some shirts are umbrellas. (✓)
II. Some suits are raincoats. (✗)

Method II

Some umbrellas are raincoats. (I-type)
All raincoats are shirts (A-type)
No shirt is a blazer. (E-type)
Some blazers are suits. (I-type)

From Statements 1 and 2,
I + A = I-type conclusion
Some umbrellas are shirts $\xrightarrow{\text{Conversion}}$ Some shirts are umbrellas
So, Conclusion I follows.
From Statements 2, 3 and 4,
(A + E) + I = E + I = OR
i.e., Some suits are not raincoats.
Hence, Conclusion II does not follow.
So, only Conclusion I follows.

3. (*b*) **Method I**



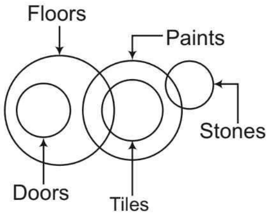
Conclusions I. Some bulbs are computers. (✗)
II. No chalk is tubelight. (✓)

Method II

Some computers are boards. (I-type)
Some boards are chalks. (I-type)
All chalks are bulbs. (A-type)
No bulb is a tube light. (E-type)

From Statements 1, 2 and 3,
$\underbrace{I + I}$ +A = Not a valid conclusion
So, Statement 1 does not follow.
From Statements 3 and 4,
A + E = E-type conclusion
No chalk is tubeleight = Statement 2
So, only Conclusion II follows.

4. (*a*) **Method I**



Conclusions I. Some floors are paints. (✓)
II. Some doors are tiles. (✗)

Method II

All doors are floors. (A-type)
Some floors are tiles. (I-type)
All tiles are paints. (A-type)
Some paints are stones. (I-type)

From Statements 2 and 3,
I + A = I-type conclusion
∴ Some floors are paints = Conclusion I
From Statements 1 and 2,
A + I = Not a valid conclusion
So, only Conclusion I follows.

5. (*c*) **Method I**

Conclusions I. Some nuts are flowers. (✗)
II. No nut is flower. (✗)
Complementary pair (I-E)

Method II

Some leaves are petals. (I-type)
Some petals are flowers. (I-type)
All flowers are fruits. (A-type)
Some fruits are nuts. (I-type)

From Statements 3 and 4,
A + I = Not a valid conclusion
So, Conclusions I does not follow.

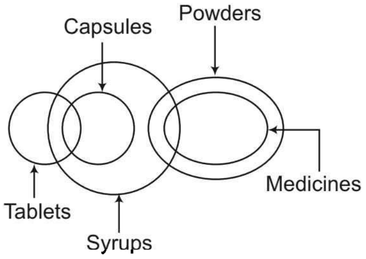
But, Conclusions I and II has both subject and predicate same and form (E–I) pair

Hence, either Conclusion I or II follows.

6. (*d*)

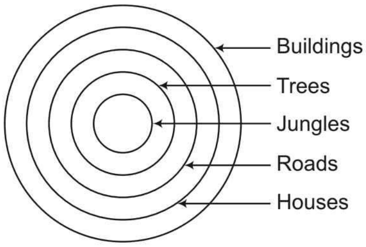
Conclusions I. Some paintings are designs. (✗)
II. Some photographs are movies. (✗)

7. (*e*)


Capsules
Powders
Tablets
Syrups
Medicines

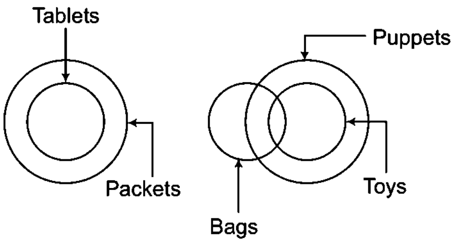
Conclusions I. Some syrups are powders. (✓)
II. Some syrups are tablets. (✓)

8. (*e*)


Buildings
Trees
Jungles
Roads
Houses

Conclusions I. All trees are houses. (✓)
II. Some buildings are roads. (✓)

9. (*b*)

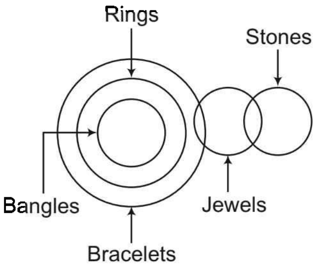

Tablets
Packets
Puppets
Bags
Toys

Conclusions I. Some puppets are tablets. (✗)
II. Some puppets are bags. (✓)

10. (*d*)

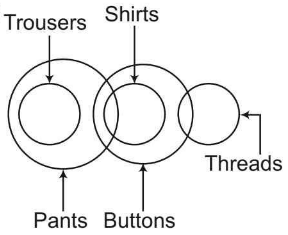
Conclusions I. Some chairs are desks. (✗)
II. Some cots are tables. (✗)

11. (*d*)


Rings
Stones
Bangles
Jewels
Bracelets

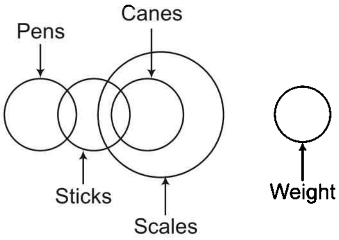
Conclusions I. Some stones are bangles. (✗)
II. Some jewels are rings. (✗)

12. (*d*)


Trousers
Shirts
Threads
Pants
Buttons

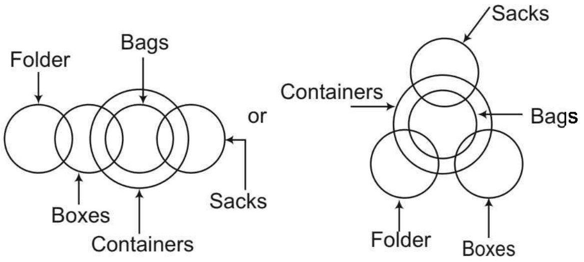
Conclusions I. Some threads are pants. (✗)
II. Some buttons are trousers. (✗)

13. (*b*)


Pens
Canes
Sticks
Scales
Weight

Conclusions I. Some sticks are scales. (✓)
II. No stick is scale. (✗)
III. No cane is weight. (✓)

14. (*b*) **Method I**

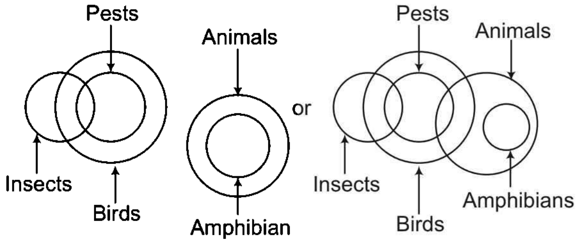

Folder
Bags
Boxes
Containers
Sacks
or
Sacks
Containers
Bags
Folder
Boxes

Conclusions I. No folder is bag. (✗)
II. Some boxes are containers. (✓)
III. Some sacks are containers. (✓)

Method II

Some folders are boxes. (I-type)
Some boxes are bags. (I-type)
All bags are containers. (A-type)
Some bags are sacks. (I-type)
Conclusion I is invalid.
From Statements 2 and 3,
I + A = I-type conclusion
∴ Some boxes are containers = Conclusion II
from Statements 3 and 4 and arranging them,
Some sacks are bags. (I-type)
All bags are containers. (A-type)
∴ I + A = I-type containers = Conclusion III
Hence, Conclusions II and III follow.

15. (*d*) **Method I**

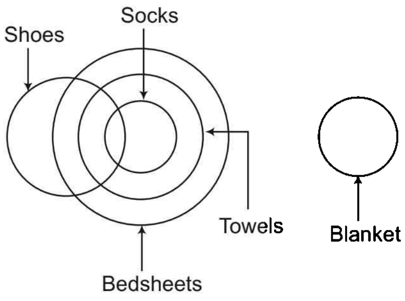

Pests
Animals
Insects
Birds
Amphibian
or
Pests
Animals
Insects
Birds
Amphibians

Conclusions I. No animal is bird. (✗)
II. Some insects are birds. (✓)
III. No pests are amphibians. (✓)

Method II

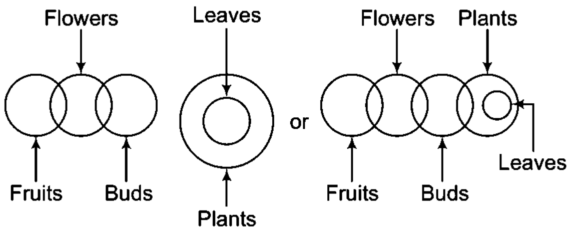
Some insects are pests. (I-type)
All pests are birds. (A-type)
No bird is amphibian. (E-type)
All amphibians are animals. (A-type)
From Statements 3 and 4,
E + A = OR type conclusion
Some animals are not birds.
So, Conclusion I does not follow.
From Statements 1 and 2,
I + A = I-type conclusion.
∴ Some insects are birds = Conclusion II
From Statements 2 and 3,
A + E = E-type conclusion
No pests are amphibians = Conclusion III
Hence, Conclusion II and III follow.

16. (*d*)


Shoes
Socks
Towels
Blanket
Bedsheets

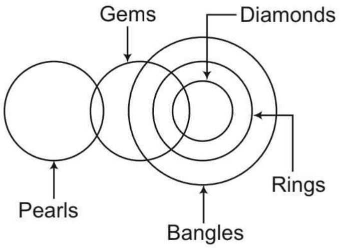
Conclusions I. No towel is blanket. (✓)
II. Some shoes are towels. (✓)
III. Some shoes are bedsheets. (✓)

17. (*a*)


Flowers
Leaves
Fruits
Buds
Plants
or
Flowers
Plants
Leaves
Fruits
Buds

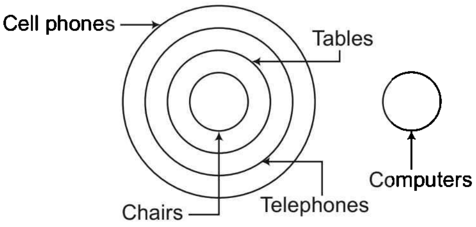
Conclusions I. No plant is bud. (✗)
II. Some plants are flowers. (✗)
III. Some buds are fruits. (✗)

18. (*c*)


Gems
Diamonds
Rings
Pearls
Bangles

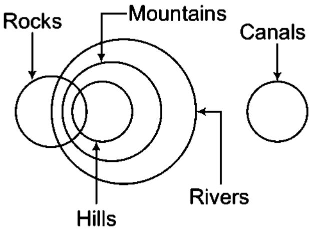
Conclusions I. Some bangles are rings. (✓)
II. All rings are diamonds. (✗)
III. All diamonds are bangles. (✓)

19. (*c*)


Cell phones
Tables
Computers
Chairs
Telephones

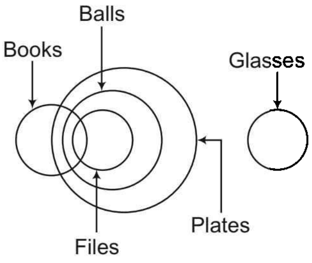
Conclusions I. All cell phones are tables. (✗)
II. Some chairs are computers. (✗)
III. No chair is computer. (✓)

20. (*e*)


Rocks
Mountains
Canals
Rivers
Hills

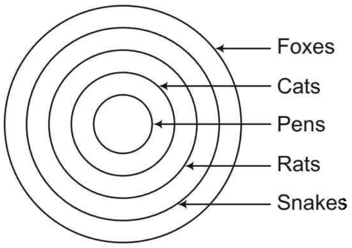
Conclusions I. All rocks are rivers. (✗)
II. Some hills are canals. (✗)
III. Some rivers are canals. (✗)

21. (*c*)


Balls
Books
Glasses
Plates
Files

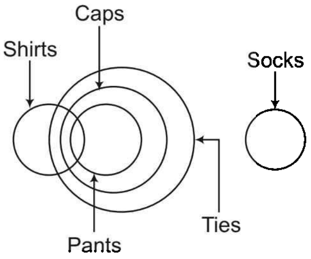
Conclusions I. No glass is plate. (✓)
II. Some balls are books. (✓)
III. All plates are balls. (✗)

22. (*d*)


Foxes
Cats
Pens
Rats
Snakes

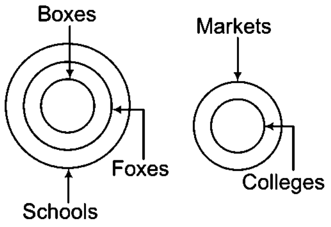
Conclusions I. Some snakes are cats. (✓)
II. All snakes are rats. (✗)
III. Some cats are pens. (✓)

23. (*a*)


Caps
Shirts
Socks
Ties
Pants

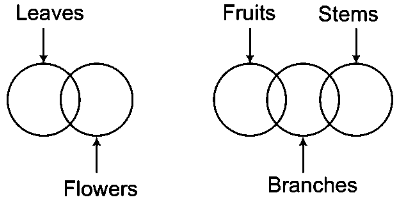
Conclusions I. No cap is socks. (✓)
II. Some pants are shirts. (✓)
III. All caps are pants. (✗)

24. (*c*)


Boxes
Markets
Foxes
Colleges
Schools

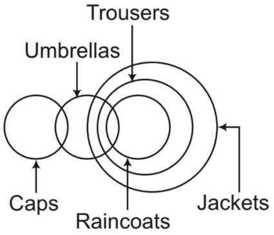
Conclusions I. No fox is college. (✓)
II. No college is school. (✓)
III. No box is fox. (✗)

25. (*e*)


Leaves
Fruits
Stems
Flowers
Branches

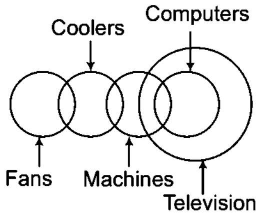
Conclusions I. Some leaves are stones. (✗)
II. All leaves are either stems or fruits. (✗)
III. All stems are either branches or fruits. (✗)

26. (*c*)


Trousers
Umbrellas
Caps
Raincoats
Jackets

Conclusions I. Some raincoats are caps. (✗)
II. Some trousers are umbrellas. (✓)
III. All raincoats are jackets. (✓)

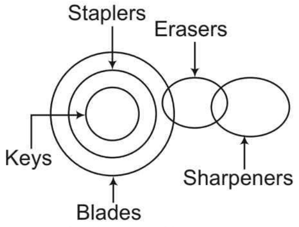
27. (*d*)


Coolers
Computers
Fans
Machines
Television

Conclusions I. Some televisions are machines. (✓)
II. Some machines are fans. (✗)
III. No machine is fan. (✗)

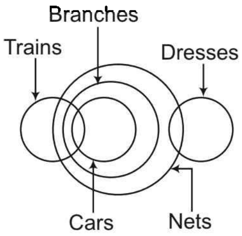
Complementary pair (I-E)

28. (*c*)


Staplers
Erasers
Keys
Sharpeners
Blades

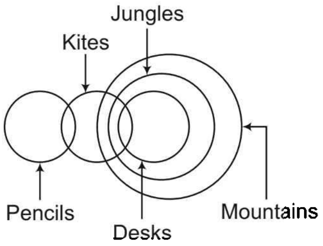
Conclusions I. Some sharpeners are keys. (✗)
II. All keys are blades. (✓)
III. Some erasers are keys. (✗)

29. (*b*)


Branches
Trains
Dresses
Cars
Nets

Conclusions I. Some dresses are cars. (✗)
II. Some nets are trains. (✓)
III. Some branches are trains. (✓)
IV. Some dresses are trains. (✗)

30. (*c*) **Method I**


Jungles
Kites
Pencils
Desks
Mountains

Conclusions I. Some mountains are pencils. (✗)
II. Some jungles are pencils. (✗)
III. Some mountains are desks. (✓)
IV. Some jungles are kites. (✓)

Method II

Some pencils are kites.	(I-type)
Some kites are desks.	(I-types)
All desks are jungles.	(A-type)
All jungles are mountains.	(A-type)

From Statements 1, 2, 3 and 4,

$[\underbrace{(I + I)}_{\text{Invalid}} + A] + A =$ Not a valid conclusion

Hence, Conclusion I does not follow.

From Statements 1, 2 and 3,

$\underbrace{(I + I)}_{\text{Invalid}} + A$ = Not a valid conclusion

Hence, Conclusion II does not follow.

From Statements 3 and 4,

A + A = A-type conclusion

All desks are mountains $\xrightarrow{\text{Conversion}}$ Some mountains are desks.

Conclusion III follows.

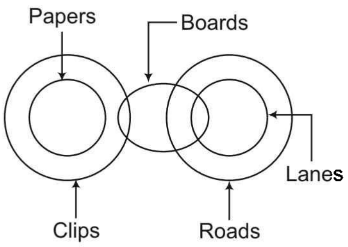
From Statements 2 and 3,

I + A = I-type conclusion

Some kits are jungles = Conclusion IV

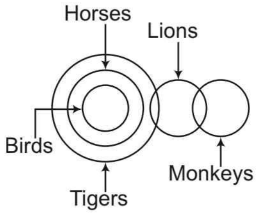
So, Conclusions III and IV follow.

31. (*e*)


Papers
Boards
Lanes
Clips
Roads

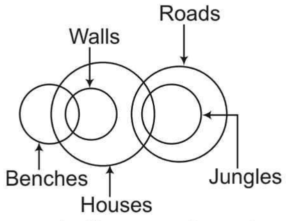
Conclusions I. Some roads are boards. (✓)
II. Some lanes are clips. (✗)
III. Some boards are papers. (✗)
IV. Some roads are clips. (✗)

32. (*a*)


Horses
Lions
Birds
Monkeys
Tigers

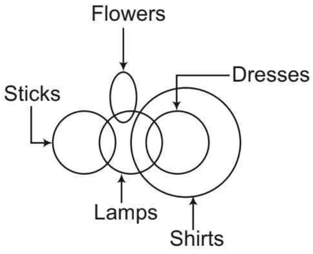
Conclusions I. Some tigers are horses. (✓)
II. Some monkeys are birds. (✗)
III. Some tigers are birds. (✓)
IV. Some monkeys are horses. (✗)

33. (*c*)


Roads
Walls
Benches
Jungles
Houses

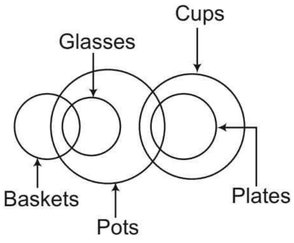
Conclusions I. Some roads are benches. (✗)
II. Some jungles are walls. (✗)
III. Some houses are benches. (✓)
IV. Some roads are houses. (✓)

34. (*a*)


Flowers
Sticks
Dresses
Lamps
Shirts

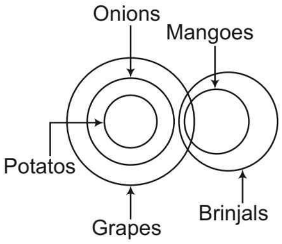
Conclusions I. Some shirts are sticks. (✗)
II. Some shirts are flowers. (✗)
III. Some flowers are sticks. (✗)
IV. Some dresses are sticks. (✗)

35. (*a*)


Cups
Glasses
Baskets
Plates
Pots

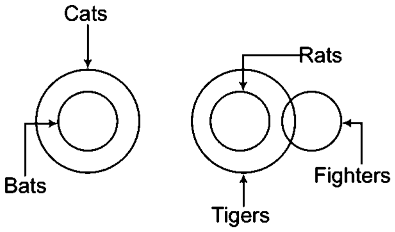
Conclusions I. No glasses are pots. (✗)
II. All glasses are baskets. (✗)
III. Atleast some pots are baskets. (✓)
IV. Some plates being glasses is a possibility. (✓)

36. (*a*)


Onions
Mangoes
Potatos
Brinjals
Grapes

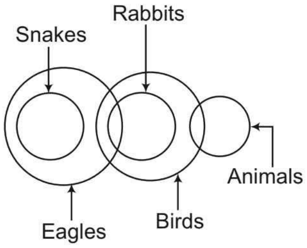
Conclusions I. Potatos are grapes. (✓)
II. Some brinjals being potatos is a possibility. (✓)
III. Each potato is grape. (✓)
IV. Some potatos are definitely onions. (✓)

37. (*e*)


Cats
Rats
Bats
Fighters
Tigers

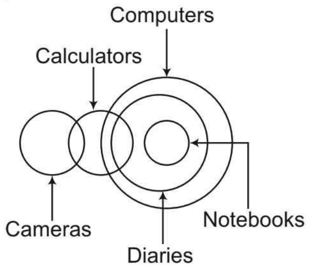
Conclusions I. Some tigers are cats. (✗)
II. Atleast some fighters being rats is a possibility. (✓)
III. Atleast some cats are definitely bats. (✓)
IV. None of the fighters is rat. (✗)

38. (*c*)


Rabbits
Snakes
Animals
Birds
Eagles

Conclusions I. Some animals are snakes. (✗)
II. Some birds are snakes. (✗)
III. Some birds are eagles. (✓)
IV. All birds are rabbits. (✗)

39. (*d*) **Method I**

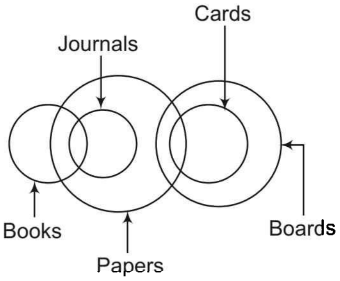

Computers
Calculators
Cameras
Notebooks
Diaries

Conclusions I. Some notebooks are calculators. (✗)
II. Some calculators are computers. (✓)
III. All notebooks are computers. (✓)
IV. Some diaries are cameras. (✗)

Method II

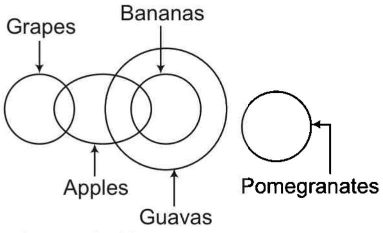
Some cameras are calculators. (I-type)
Some calculators are diaries. (I-type)
All notebooks are diaries. (A-type)
All diaries are computers. (A-type)
From Statement 2 and aligning by IEA Rule,
All notebooks are diaries. (A-type)
Some diaries are calculators. (I-type)
A + I = Not a valid conclusion.
Hence, Conclusion I does not follow.
From Statements 2 and 4,
Some calculators are diaries. (I-type)
All diaries are computers. (A-type)
I + A = I-type conclusion
∴ Some calculators are computers = Conclusion II
From Statements 3 and 4,
A + A = A-type conclusion
All notebooks are computers = Conclusion III
From Statements 1 and 2,
I + I = Not a valid conclusion
∴ Conclusion IV is not valid.
Hence, Conclusions II and III follow.

40. (*a*)


Cards
Journals
Books
Papers
Boards

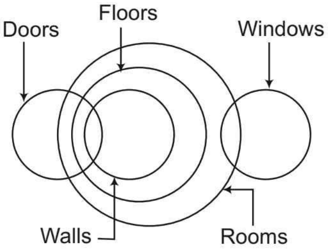
Conclusions I. Some papers are books. (✓)
II. Some papers are boards. (✓)
III. Some boards are journals. (✗)
IV. Some boards are books. (✗)

41. (*d*)


Grapes
Bananas
Apples
Guavas
Pomegranates

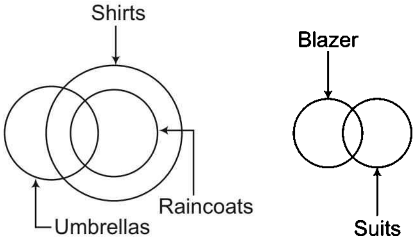
Conclusions I. No grapes are pomegranates. (✗)
II. Some guavas are grapes. (✗)
III. Some guavas are apples. (✓)
IV. No bananas are pomegranates. (✓)

42. (*e*)


Doors
Floors
Windows
Walls
Rooms

Conclusions I. All walls are rooms. (✓)
II. Some rooms are doors. (✓)
III. Some rooms are walls. (✓)
IV. Some floors are doors. (✓)

43. (*d*)


Shirts
Blazer
Raincoats
Umbrellas
Suits

Conclusions I. Some girls are definitely mads. (✓)
II. Most of the mads are foolish. (✓)
III. Atleast some girls are men. (✓)
IV. All foolish except few are girls. (✓)

Master Exercise

Take a Leap...

Directions (Q. Nos. 1-8) In each question/set of questions below are two/three statements followed by two conclusions numbered I and II. You have to take the two/three given statements to be true even if they seem to be at variance from commonly known facts and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

Give answer
(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either Conclusion I or II follows
(d) if neither Conclusion I nor II follows
(e) if both Conclusions I and II follow

1. Statements Some doctors are fools.
Joshi is a doctor.
Conclusions I. Joshi is a fool.
II. Some fools are doctors.

2. Statements Some balls are points.
All points are pens.
All pens are gels. **[MHA-CET 2011]**
Conclusions I. All balls are pens.
II. All pens are balls.

3. Statements No space is air.
All distances are spaces.
[Bihar Keshtriya (GBO) 2012]
Conclusions I. No air is a distance.
II. All spaces are distances.

4. Statements All kings are queens.
Some queens are rulers.
[Bihar Keshtriya (GBO) 2012]
Conclusions I. No ruler is a king.
II. All rulers being king is a possibility.

5. Statements Some lights are rays.
All rays are optics.
[Bihar Keshtriya (GBO) 2012]
Conclusions I. Some lights are definitely not optics.
II. Some rays are definitely not lights.

6. Statements All vacancies are jobs.
Some jobs are occupations.
[IBPS (PO) 2012]
Conclusions I. All vacancies are occupations.
II. All occupations being vacancies is a possibility.

Directions (7-8)

Statements All cars are trucks.
No trucks is a jeep.
All jeeps are engines.
[Bihar Keshtriya (GBO) 2012]

7. Conclusions I. No car is a jeep.
II. All cars being engines is a possibility.

8. Conclusions I. No engine is a car.
II. No truck is an engine.

Directions (Q. Nos. 9-14) In each of the questions below are given some statements followed by some conclusions. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

9. Statements Some pencils are windows.
All windows are roads.
Some roads are cups.
All cups are chains. **[SBI (PO) 2010]**
Conclusions I. Some chains are pencils.
II. Some cups are pencils.
III. Some chains are windows.
IV. Some roads are pencils.

(a) None follows
(b) Only II follows
(c) Only IV follows
(d) III and IV follow
(e) Only III follows

10. Statements Some beds are mirrors.
Some mirrors are dolls.
Some dolls are cheques.
Some cheques are pins. **[SBI (PO) 2010]**

Conclusions I. Some pins are dolls.
II. Some cheques are beds.
III. Some cheques are mirrors.
IV. Some dolls are beds.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only III follows
(e) Only IV follows

11. Statements All chocolates are holders.
No holder is a lamp.
Some lamps are desks.
All desks are pens. **[SBI (PO) 2010]**

Conclusions I. Some pens are holders.
II. Some desks are lamps.
III. No pen is a holder.
IV. Some pens are chocolates.

(a) Only I follows
(b) Only II follows
(c) Only III follows
(d) Either I or III follows
(e) Either I or III and II follow

12. Statements All glasses are rooms.
Some rooms are planes.
All planes are ducks.
Some ducks are lanterns. **[SBI (PO) 2010]**

Conclusions I. Some lanterns are planes.
II. Some ducks are rooms.
III. Some rooms are glasses.
IV. Some ducks are glasses.

(a) I and II follow
(b) II and III follow
(c) I, II and III follo
(d) All I, II, III and IV follow
(e) None of these

13. Statements Some sweets are almonds.
Some almonds are cashews.
All cashews are pistachios. **[IRMA 2009]**

Conclusions I. All almonds are pistachios.
II. Some pistachios are sweets.
III. Some sweets are cashews.
IV. All almonds are either sweets or cashews.

(a) None follows
(b) II and III follow
(c) Only IV follows
(d) Either I or IV follows
(e) None of these

14. Statements Some fruits are seeds.
All seeds are trees.
All plants are trees. **[IRMA 2009]**

Conclusions I. Some plants are seeds.
II. Some plants are fruits.
III. Some trees are fruits.
IV. No plant is a seed.

(a) Only III follows
(b) III and either I or IV follow
(c) II and either I or IV follow
(d) I or IV follows
(e) None of the above

Directions (Q. Nos. 15-16) Each questions comprises two statements (numbered as I and II). You have to take the statements as true even, if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follow from the given statements, disregarding commonly known facts.

15. Statements I. All contracts are agreements.
II. All agreements are accepted offers. **[CLAT 2014]**

Which of the following derivations is correct?

(a) All accepted offers are contracts
(b) All agreements are contracts
(c) All contracts are accepted offers
(d) None of the above

16. Statements I. Some beautiful women are actresses.
II. All actresses are good dancers. **[CLAT 2014]**

Which of the following derivations is correct?

(a) Some beautiful women are good dancers.
(b) All good dancers are actresses.
(c) Both (a) and (b)
(d) None of the above

Directions (Q. Nos. 17-21) In each of the questions below are given some statements followed by some conclusions. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

17. Statements Some animals are fighters.
All fighters are tigers.
No tiger is lighter.

Conclusions I. None of the lighters is tiger.
II. Some tigers are definitely not lighters.
III. Most of the fighters are animals.

(a) None follows (b) Only I follows
(c) Only II follows (d) Only III follows
(e) All follow

18. Statements Some onions are pumpkins.
All pumpkins are gingers.
Some gingers are apples.

Conclusions I. Atleast some onions are definitely gingers.
II. Apples are gingers.
III. All apples except a few are gingers.

(a) Only I follows (b) I and III follow
(c) Only III follows (d) I and II follow
(e) None follows

19. Statements Some pens are tables.
All tables are inks.
Some inks are apples.

Conclusions I. Some apples are pens.
II. Some apples are tables.
III. Some inks are pens.

(a) None follows (b) Only I follows
(c) Only II follows (d) Only III follows
(e) None of these

20. Statements All fruits are vegetables.
All pens are vegetables.
All vegetables are rains.

Conclusions I. All fruits are rains.
II. All pens are rains.
III. Some rains are vegetables.

(a) None follows
(b) I and II follow
(c) II and III follow
(d) I and III follow
(e) All follow

21. Statements Some flowers are skies.
Some skies are rooms.
Some rooms are windows.

Conclusions I. Some windows are skies.
II. Some rooms are flowers.
III. No sky is window.

(a) Only I follows
(b) Either I or II follows
(c) Either II or III follows
(d) Either I or III follows
(e) None of the above

Directions (Q. Nos. 22-23)

Each question below are given two statements followed by two conclusions numbered I and II. You have to take the two given statements to be true even, if they seem to be at variance from commonly known facts and decide which of the given conclusions logically follows from the two given statements, disregarding commonly known facts.

Give answer
(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either I or II follows
(d) if neither I nor II follows

22. Statements Some books are papers.
No copies are papers. **[CMAT 2014]**

Conclusions I. Some books are not copies.
II. No books are copies.

23. Statements Some cups are plates.
Some plates are jugs. **[CMAT 2014]**

Conclusions I. Some cups are jugs.
II. All cups are jugs.

Directions (Q. Nos. 24-27)

In each of the questions below are given some statements followed by some conclusions. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

24. Statements All petals are flowers.
Some flowers are buds.
Some buds are leaves.
All leaves are plants. **[MAT 2008]**

Conclusions I. Some petals are buds.
II. Some flowers are plants.
III. No flower is plant.

(a) Only I follows (b) Either II or III follows
(c) I and II follow (d) Only III follows
(e) None of these

25. Statements All rockets are poles.
Some poles are trams.
Some trams are ropes.
All ropes are tents. **[UCO Bank (PO) 2010]**

Conclusions I. Some tents are trams.
II. Some ropes are rockets.
III. Some trams are rockets.
IV. Some poles are rockets.

(a) I and II follow (b) I, II and III follow
(c) I and III follow (d) I and IV follow

(e) None of these

26. Statements All dials are mirrors.
All mirrors are spoons.
Some spoons are decks.
Some decks are chairs.
[UCO Bank (PO) 2010]

Conclusions
I. Some decks are mirrors.
II. Some spoons are dials.
III. Some decks are dials.
IV. Some chairs are spoons.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only III follows
(e) Only IV follows

27. Statements Some charts are darts.
All darts are carts.
Some carts are smarts.

Conclusions
I. Some charts are carts.
II. Some carts are darts.
III. Some darts are smarts.
IV. Some smarts are charts.

(a) I and III follow
(b) II and III follow
(c) I and II follow
(d) I, III and IV follow
(e) None of these

28. Two statements are given followed by two Conclusions I and II. You have to consider the statements to be true, even if they seem to be at variance from commonly known facts. You are to decide which of the given conclusions definitely follows from the given statements. Indicate you answer.

Statements All crows are birds.
All peacocks are crows.

Conclusions
I. All peacocks are birds.
II. All birds are peacocks.

(a) Both Conclusions I and II follow
(b) Neither Conclusion I nor II follows
(c) Only Conclusion I follows
(d) Only Conclusion II follows

Directions (Q. Nos. 29-30)

In each question below are three statements followed by two Conclusions I and II. You have to take the statements to be true even if they seem to be at variance from commonly known facts and then decide which of the given conclusions logically follows from the given statements. **[MHA-CET 2011]**

Give answer
(a) if only I follows
(b) if only II follows
(c) if either I or II follows
(d) if neither I nor II follows
(e) if both I and II follow

Statements No shoe is glove.
All gloves are caps.
All caps are jackets.

29. Conclusions
I. Atleast some shoes are caps.
II. Atleast some jackets are gloves.

30. Conclusions
I. No shoe is a jacket.
II. All gloves are jackets.

Directions (Q. Nos. 31-33)

In each of the questions below are given four statements followed by four Conclusions numbered I, II, III and IV. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

31. Statements Some houses are forests.
All forests are trees.
Some trees are hills.
All hills are buses. **[BOI (PO) 2010]**

Conclusions
I. Some buses are trees.
II. Some trees are houses.
III. Some hills are houses.
IV. Some buses are forests.

(a) I and II follow
(b) I, II and IV follow
(c) I, II and III follow
(d) All I, II, III and IV follow
(e) None of the above

32. Statements Some lakes are rivers.
Some rivers are mountains.
Some mountains are books.
Some books are papers. **[BOI (PO) 2010]**

Conclusions
I. Some books are rivers.
II. Some papers are lakes.
III. Some mountains are lakes.
IV. No paper is lake.

(a) None follows
(b) Either II or IV follows
(c) Only II follows
(d) Only IV follows

(e) Either II or IV and III follow

33. **Statements** Some tigers are horses.
All horses are goats.
All goats are dogs.
Some dogs are cats. **[BOI (PO) 2010]**

Conclusions I. Some cats are tigers.
II. Some dogs are horses.
III. Some goats are tigers.
IV. Some cats are horses.

(a) I and II follow
(b) I, II and III follow
(c) II and III follow
(d) II, III and IV follow
(e) None of the above

Directions (Q. Nos. 34-35) Each question given below consists of five or six statements followed by options consisting of three statements put together in a specific order. Choose the option which indicates a valid argument containing logically related statements that is, where the third statement is a conclusion drawn from the preceding two statements. **[CMAT 2014]**

34. A : All synopses are poets.
B : Some synopses are mentors.
C : Some X are not mentors.
D : All X are poets.
E : All synopses are mentors.
F : All synopses are X.
(a) ACB (b) AEC (c) FEC (d) DFA

35. A : All heroines are pretty.
B : Some heroines are popular.
C : Sweta is pretty.
D : Sweta is a popular heroine.
E : Some popular girls are pretty.
(a) ABE (b) ACD
(c) DCA (d) EDC

36. There are three statements. followed by three conclusions. you have to determine which of these conclusion follow.

Statements All kids like to play.
Some kids like ice-cream.
Some kids look like their mothers
[SNAP 2013]

Conclusions I. All kids who like ice-cream look like their mothers.
II. Kids who like ice-cream also like to play.
III. Kids who like to play do not look like their mothers.

(a) Only I (b) Only II
(c) II and III (d) None can be a fact

Directions (Q. Nos. 37-40) In each of the question sets below are two/three statements followed by two conclusions numbered I and II. You have to take the given statements to be true even, if they seem to be at variance from commonly known facts and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

Give answer
(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either Conclusion I or II follows
(d) if neither Conclusion I nor II follows
(e) if both Conclusions I and II follow

37. **Statements** Some symbols are figures.
All symbols are graphics.
No graphic is a picture. **[IBPS (PO) 2012]**

Conclusions I. Some graphics are figures.
II. No symbol is a picture.

38. **Statements** Some mobiles are telephones.
All telephones are pagers.
No pager is a camera.

Conclusions I. Some mobiles are definitely pagers.
II. No mobile is a camera.

Directions (39-40)

Statements All countries are streets.
No street is flag.
Some flags are avenues.
[MHA-CET 2011]

39. **Conclusions** I. Some avenues being streets is a possibility.
II. Some countries are flags.

40. **Conclusions** I. No avenue is a country.
II. Some streets are flags.

Directions (Q. Nos. 41-45) In each question below are given two statements numbered I and II. You have to take the two given statements as true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions and then decide which of the given conclusions logically follow from the given statements, disregarding commonly known facts.

41. I. All vegetables have gravy.
II. All lunch has vegetable. **[CLAT 2013]**
(a) All lunch has gravy
(b) All gravy has lunch
(c) Both (a) and (b)
(d) None of the above

42. I. Some blues are green.
II. Pink is green. **[CLAT 2013]**
(a) Some blue is pink
(b) Some green is pink
(c) Either 'a' or 'b' follows
(d) Some pink are blues

43. I. All boys are tall.
II. All Punjabi are tall. **[CLAT 2013]**
(a) All boys are Punjabi
(b) Some boys are Punjabi
(c) Both of the above
(d) None of the above

44. Statements I. Some red are yellow.
II. No yellow is green. **[CG PSC 2013]**

Conclusions I. Some yellow are red.
II. Some green are red.
III. Some red are not green.
IV. All green are red.

(a) II and III follow (b) I and II follow
(c) Either III our IV follow (d) Only I follows

45. Statements I. Some years are decades.
II. All centuries are decades.
[SSC (CGL) 2010]

Conclusions I. Some centuries are years.
II. Some decades are years.
III. No century is a year.

(a) Conclusion I and II follow
(b) Conclusion I and III follow
(c) Only Conclusion I follows
(d) Only Conclusion II follows

Directions (Q. Nos. 46-59) Some statements followed by some conclusions are given below in each of the question. You are required to check the validity of each of the conclusion on the basis of the given statements and to mark your answer choice accordingly.

46. Statements All cricketers are football players.
Some hockey players are cricketers.
No football player is a basketball player.
No basketball player is a hockey player.
[JMET 2011]

Conclusions I. Some hockey players are football players.
II. No basketball player is a cricketer.
III. Some hockey players are basketball players
IV. Some football players are cricketers.

(a) Only I follows (b) I, II and IV follow
(c) I and IV follow (d) I and II follow
(e) None follows

47. Statements Some pearls are gems.
All gems are diamonds.
No diamond is stone.
Some stones are corals. **[NMAT 2008]**

Conclusions I. Some stones are pearls.
II. Some corals are diamonds.
III. No stone is pearl.

(a) Only I follows (b) Only II follows
(c) Either I or III follows (d) I and II follow
(e) None of these

48. Statements Some rocks are bricks.
Some bricks are sands.
No sand is cement. **[IRMA 2009]**

Conclusions I. Some rocks are cements.
II. Some rocks are sands.
III. Some sands are bricks.
IV. No brick is cement.

(a) None follows
(b) I and II follow
(c) I and III follow
(d) II and III follow
(e) None of the above

49. Statements Some cups are slates.
All slates are apples.
No apple is a car.

Conclusions I. Some cars are slates.
II. Some cups are cars.
III. Some apples are cups.
IV. No car is a cup.

(a) Only II follows
(b) Only IV follows
(c) Only III follows
(d) Either II or IV and III follow
(e) None of the above

50. Statements All glasses are frames.
Some frames are metals.
All blocks are glasses.

Conclusions I. All blocks are either metals or glasses.
II. Some blocks are metals.
III. Some farmers are blocks.

(a) Only III follows (b) Only II follows
(c) Only I follows (d) I and III follow
(e) None of these

51. Statements Some dews are drops.
All drops are stones.

Conclusions I. Atleast some dews are stones.
II. Atleast some stones are drops.

(a) Only Conclusion I follows
(b) Only Conclusion II follows
(c) Either I or II follows
(d) Neither I nor II follows
(e) Both I and II follow

52. Statements I. All Philosophers are fools.
II. All fools are illiterate.
[NIFT (UG) 2012]

Conclusions I. All Philosophers are illiterate.
II. All illiterates are Philosopher.
III. All illiterates are fools.
IV. Some illiterates would by Philosopher

(a) Only IV follows (b) I and IV follow
(c) Only II follows (d) III and IV follow
(e) No solution

53. Statements Some beads are rings.
Some rings are bangles.
All bangles are clothes.
All clothes are boxes. **[PNB (PO) 2010]**

Conclusions I. Some boxes are bangles.
II. Some clothes are rings.
III. Some bangles are beads.

(a) None follows (b) Only I follows
(c) Only II follows (d) Only III follows
(e) I and II follow

54. Statements All chairs are fires.
Some fires are winds.
All winds are nets.
Some nets are clocks. **[PNB (PO) 2010]**

Conclusions I. Some clocks are winds.
II. Some nets are fires.
III. Some winds are chairs.

(a) None follows (b) Only I follows
(c) Only II follows (d) Only III follows
(e) II and III follow

55. Statements All desks are pillars.
All pillars are circles.
Some circles are squares.
Some squares are rectangles.
[PNB (PO) 2010]

Conclusions I. Some rectangles are pillars.
II. Some circles are desks.
III. Some squares are desks.

(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only III follows
(e) I and II follow

Directions (Q. Nos. 56-57)

Statements Some squares are circles.
No circle is a triangle.
No line is a square.

Give answer
(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either I or II follows
(d) if neither I nor II follows
(e) if both I and II follow

56. Conclusions I. All squares can never be triangles.
II. Some lines are circles.

57. Conclusions I. No triangle is a square.
II. No line is a circle.

Directions (Q. Nos. 58-59)

Statements All songs are poems.
All poems are rhymes.
No rhyme is a paragraph.

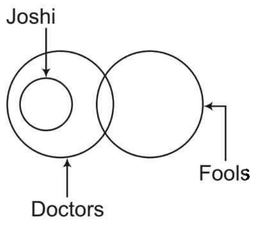
Give answer
(a) if only Conclusion I follows
(b) if only Conclusion II follows
(c) if either I or II follows
(d) if neither I nor II follows
(e) if both I and II follow

58. Conclusions I. No song is a paragraph.
II. No poem is a paragraph.

59. Conclusions I. All rhymes are poems.
II. All songs are rhymes.

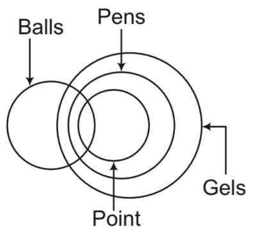
Response & Interpretations (Master Exercise)

1. (*b*)


Joshi
Fools
Doctors

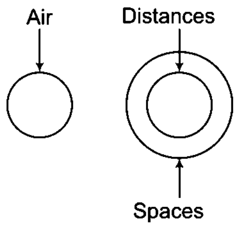
Conclusions I. Joshi is a fool. (✗)
II. Some fools are doctors. (✓)

2. (*d*)


Balls
Pens
Gels
Point

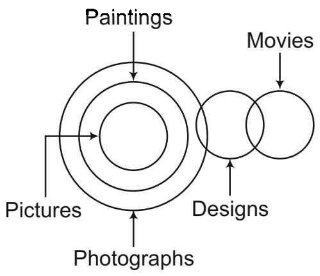
Conclusions I. All balls are pens. (✗)
II. All pens are balls. (✗)

3. (*a*)


Air
Distances
Spaces

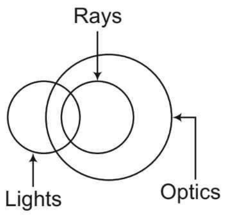
Conclusions I. No air is a distance. (✓)
II. All spaces are distance. (✗)

4. (*b*)


Paintings
Movies
Pictures
Designs
Photographs

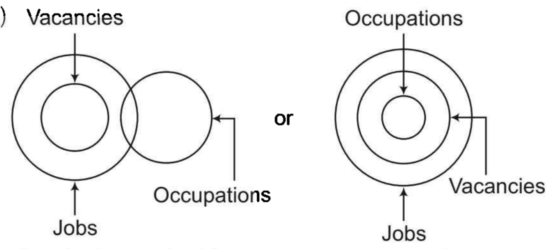
Conclusions I. No ruler is a king. (✗)
II. All rulers being king is a possibility. (✓)

5. (*d*)


Rays
Lights
Optics

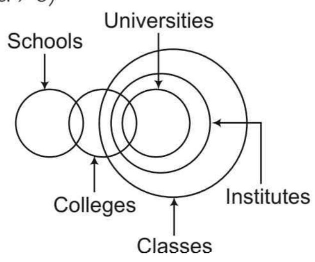
Conclusions I. Some lights are definitely not optics. (✗)
II. Some rays are definitely not lights. (✗)

6. (*b*)


Vacancies
Occupations
Jobs
or
Occupations
Vacancies
Jobs

Conclusions I. All vacancies are occupations. (✗)
II. All occupations being vacancies is a possibility. (✓)

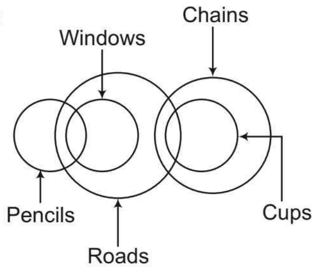
Solutions (Q. Nos. 7-8)


Universities
Schools
Institutes
Colleges
Classes

7. (*e*) **Conclusions** I. No car is a jeep. (✓)
II. All cars being engines is a possibility. (✓)

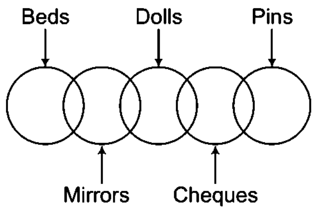
8. (*d*) **Conclusions** I. No engine is a car. (✗)
II. No truck is an engine. (✗)

9. (*c*)


Chains
Windows
Pencils
Cups
Roads

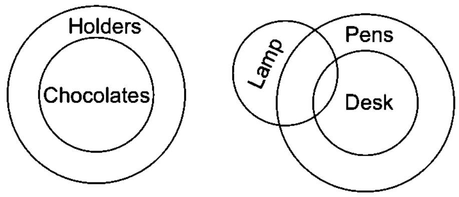
Conclusions I. Some chains are pencils. (✗)
II. Some cups are pencils. (✗)
III. Some chains are windows. (✗)
IV. Some roads are pencils. (✓)

10. (*a*)


Beds
Dolls
Pins
Mirrors
Cheques

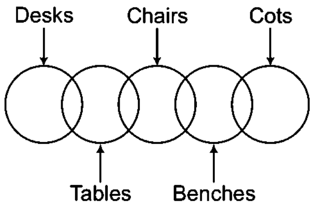
Conclusions I. Some pins are dolls. (✗)
II. Some cheques are beds. (✗)
III. Some cheques are mirrors. (✗)
IV. Some dolls are beds. (✗)

11. (*e*)


Holders
Chocolates
Lamp
Pens
Desk

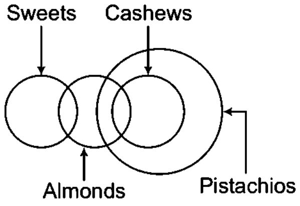
Conclusions I. Some pens are holders. (✗)
Complementary pair (I-E)
II. Some desks are lamps. (✓)
III. No pen is a holder. (✗)
Complementary pair (I-E)
IV. Some pens are chocolates. (✗)

12. (*b*)


Desks
Chairs
Cots
Tables
Benches

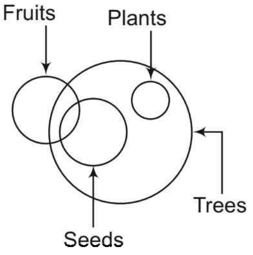
Conclusions I. Some lanterns are planes. (✗)
II. Some ducks are rooms. (✓)
III. Some rooms are glasses. (✓)
IV. Some ducks are glasses. (✗)

13. (*a*)


Sweets
Cashews
Almonds
Pistachios

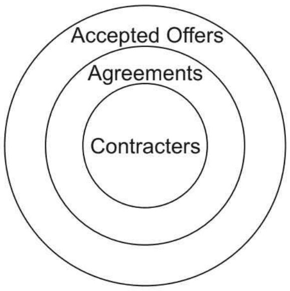
Conclusions I. All almonds are pistachios. (✗)
II. Some pistachios are sweets. (✗)
III. Some sweets are cashews. (✗)
IV. All almonds are either sweets or cashews. (✗)

14. (*b*)


Fruits
Plants
Trees
Seeds

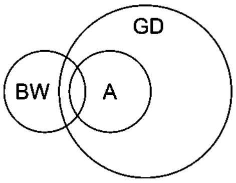
Conclusions I. Some plants are seeds. (✗)
Complementary pair (I-E)
II. Some plants are fruits. (✗)
III. Some trees are fruits (✓)
IV. No plant is a seed. (✗)
Complementary pair (I-E)

15. (*c*)


Accepted Offers
Agreements
Contracters

So, all contracts are accepted offers is the correct.

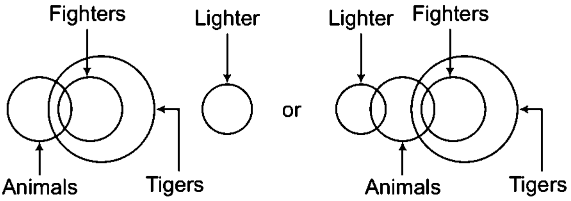
16. (*a*)



BW : Beautiful Women
A : Actresses
GD : Good Dancers

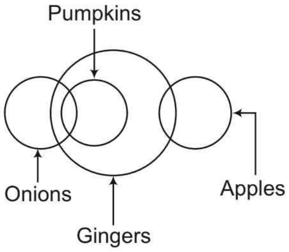
Som beautiful women are good dancers but there are some good dancers who are not actresses.

17. (*e*)


Fighters
Lighter
Lighter
Fighters
or
Animals
Tigers
Animals
Tigers

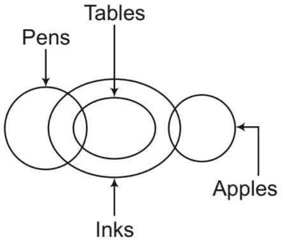
Conclusions I. None of the lighter is tiger. (✓)
II. Some tigers are definitely not lighters (✓)
III. Most of the fighters are animals. (✓)

18. (*b*)


Pumpkins
Onions
Apples
Gingers

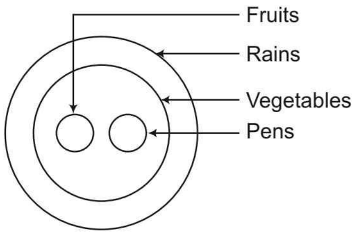
Conclusions I. Atleast some onions are definitely gingers. (✓)
II. Apples are gingers. (✗)
III. All apples except a few are gingers. (✓)

19. (*d*)


Tables
Pens
Apples
Inks

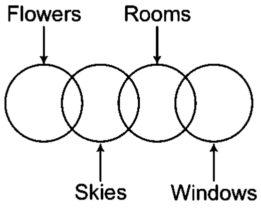
Conclusions I. Some apples are pens. (✗)
II. Some apples are tables. (✗)
III. Some inks are pens. (✓)

20. (*e*)


Fruits
Rains
Vegetables
Pens

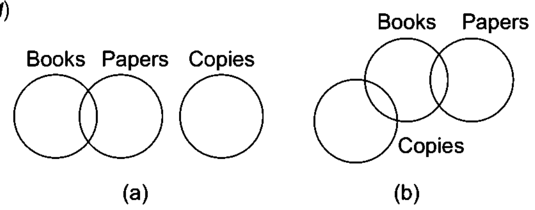
Conclusions I. All fruits are rains. (✓)
II. All pens are rains. (✓)
III. Some rains are vegetables. (✓)

21. (*d*)


Flowers
Rooms
Skies
Windows

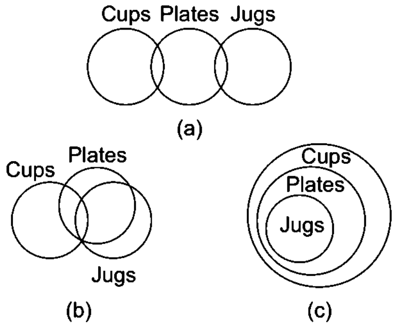
Conclusions I. Some windows are skies. (✗)
Complementary pair (I-E)
II. Some rooms are flowers. (✗)
III. No sky is window. (✗)
Complementary pair (I-E)

22. (*a*)


Books
Papers
Copies
(a)
Books
Papers
Copies
(b)

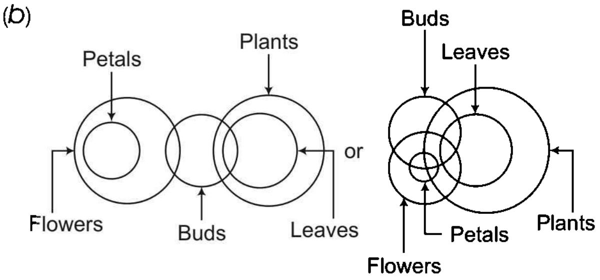
Conclusions I. Some books are not copies. (✓)
II. No books are copies. (✗)

23. (*d*)


Cups
Plates
Jugs
(a)
Cups
Plates
Jugs
(b)
Cups
Plates
Jugs
(c)

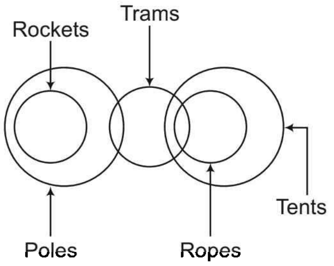
Conclusions I. Some cups are jugs. (✗)
II. All cups are jugs. (✗)

24. (*b*)


Petals
Plants
Flowers
Buds
Leaves
or
Buds
Leaves
Petals
Plants
Flowers

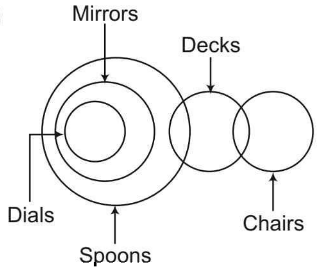
Conclusions I. Some petals are buds. (✗)
II. Some flowers are plants. (✗)
Complementary pair (I-E)
III. No flower is plant. (✗)
Complementary pair (I-E)

25. (*d*)


Rockets
Trams
Tents
Poles
Ropes

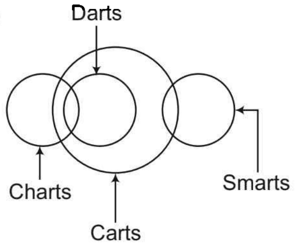
Conclusions I. Some tents are trams. (✓)
II. Some ropes are rockets. (✗)
III. Some trams are rockets. (✗)
IV. Some poles are rockets. (✓)

26. (*c*)


Mirrors
Decks
Dials
Chairs
Spoons

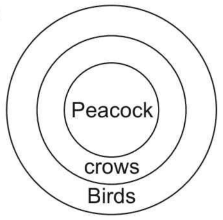
Conclusions I. Some decks are mirrors. (✗)
II. Some spoons are dials. (✓)
III. Some decks are dials. (✗)
IV. Some chairs are spoons. (✗)

27. (*c*)


Darts
Charts
Smarts
Carts

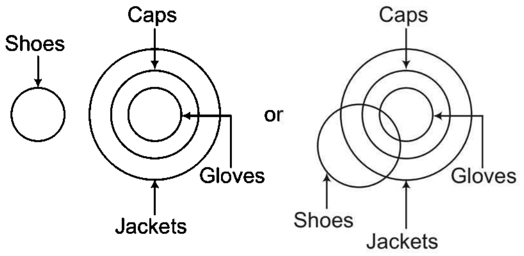
Conclusions I. Some charts are carts. (✓)
II. Some carts are darts. (✓)
III. Some darts are smarts. (✗)
IV. Some smarts are charts. (✗)

28. (*c*)


Peacock
crows
Birds

Conclusions I. All peacocks are birds. (✓)
II. All birds are peacocks. (✗)

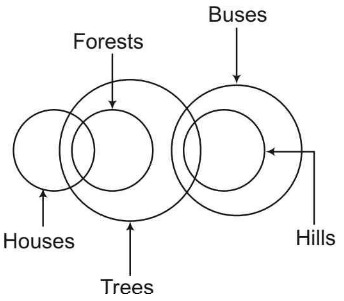
Solutions (Q. Nos. 29-30)


Shoes
Caps
Gloves
Jackets
or
Caps
Gloves
Shoes
Jackets

29. (*b*) **Conclusions** I. Atleast some shoes are caps. (✗)
II. Atleast some jackets are gloves. (✓)

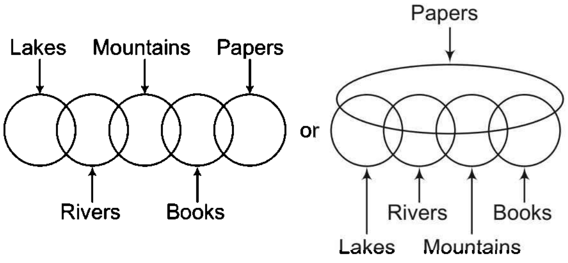
30. (*b*) **Conclusions** I. No shoe is a jacket. (✗)
II. All gloves are jacket. (✓)

31. (*a*)


Forests
Buses
Houses
Hills
Trees

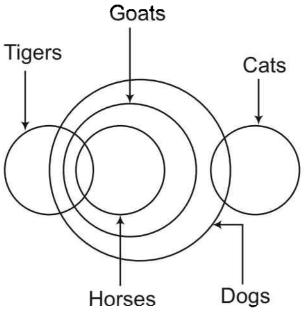
Conclusions I. Some buses are trees. (✓)
II. Some trees are houses. (✓)
III. Some hills are houses. (✗)
IV. Some buses are forests. (✗)

32. (*b*)


Lakes
Mountains
Papers
Rivers
Books
or
Papers
Rivers
Books
Lakes
Mountains

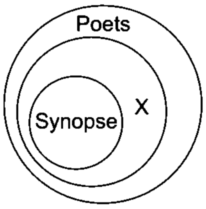
Conclusions I. Some books are rivers. (✗)
II. Some papers are lakes. (✗)
Complementary pair (I-E)
III. Some mountains are lakes. (✗)
IV. No paper is lake. (✗)
Complementary pair (I-E)

33. (*c*)


Goats
Tigers
Cats
Horses
Dogs

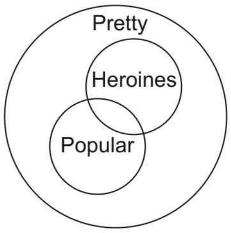
Conclusions I. Some cats are tigers. (✗)
II. Some dogs are horses. (✓)
III. Some goats are tigers. (✓)
IV. Some cats are horses. (✗)

34. (*e*)


Poets
Synopse
X

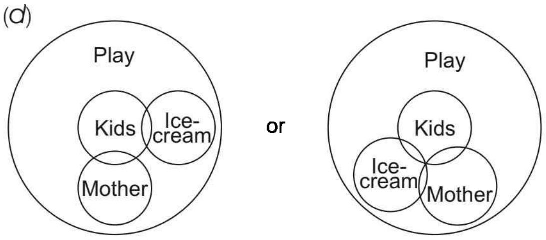
It is clearly shown from the above figure that DFA is correct argument.
D - All X are poets. F-All synopses are X.
A-All synopses are poets.

35. (*a*)


Pretty
Heroines
Popular

It is clear from the above figure that ABE is valid argument.
A - All heroines are pretty. B - Some heroines are popular.
E - Some popular girls are pretty.

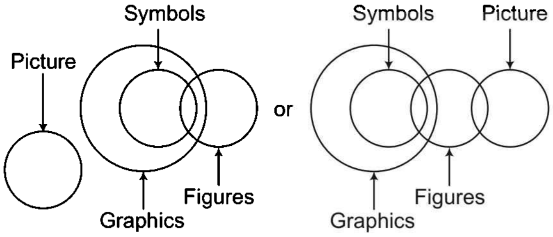
36. (*d*)


Play
Kids
Ice-cream
Mother
or
Play
Kids
Ice-cream
Mother

(i) (ii)

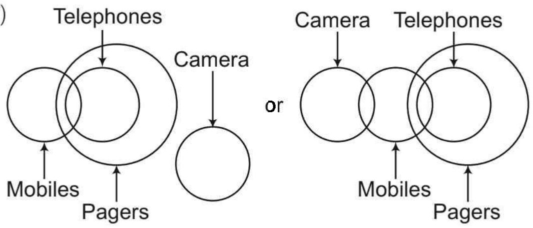
Statement 1 'All kids who like ice-cream look like their mothers' (✗)
Statement 2 'Kids who like ice-cream also like to play' (✓)
Statement 3 'Kids who like to play do not look like their mothers' (✗)

37. (*e*)


Symbols
Picture
Figures
Graphics
or
Symbols
Picture
Figures
Graphics

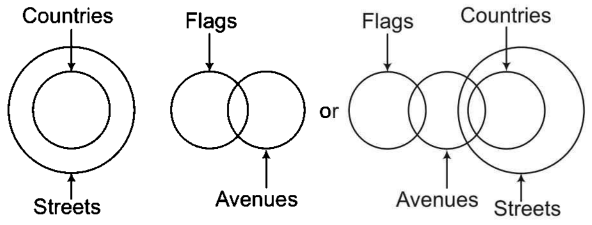
Conclusions I. Some graphics are figures. (✓)
II. No symbol is a picture. (✓)

38. (*a*)


Telephones
Camera
Mobiles
Pagers
or
Camera
Telephones
Mobiles
Pagers

Conclusions I. Some mobiles are definitely pagers. (✓)
II. No mobile is a camera. (✗)

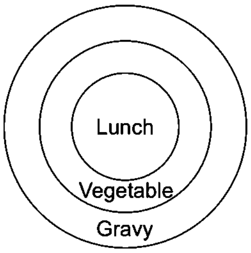
Solutions (Q. Nos. 39-40)


Countries
Streets
Flags
Avenues
or
Flags
Countries
Avenues
Streets

39. (*a*) **Conclusions** I. Some avenues being streets is a possibility. (✓)
II. Some countries are flags. (✗)

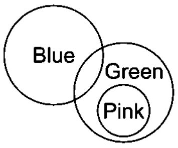
40. (*d*) **Conclusions** I. No avenue is a country. (✗)
II. Some streets are flags. (✗)

41. (*a*)


Lunch
Vegetable
Gravy

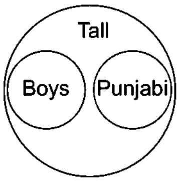
Conclusions I. All lunch has gravy. (✓)
II. All lunch has vegetable. (✗)

42. (*b*)


Blue
Green
Pink

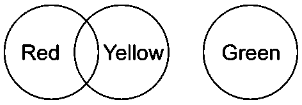
Conclusions I. Some blue is pink. (✗)
II. Some green is pink. (✓)

43. (*d*)


Tall
Boys
Punjabi

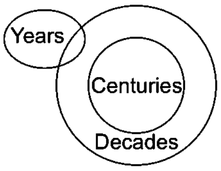
Conclusions I. All boys are Punjabi.
II. Some boys are Punjabi. (✗)

44. (*e*)


Red
Yellow
Green

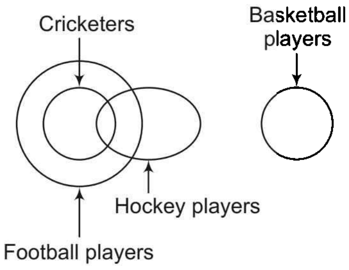
Conclusions I. Some yellow are red. (✓)
II. Some green are red. (✗)
III. Some red are not green. (✗)
IV. All green are red. (✗)

45. (*d*)


Years
Centuries
Decades

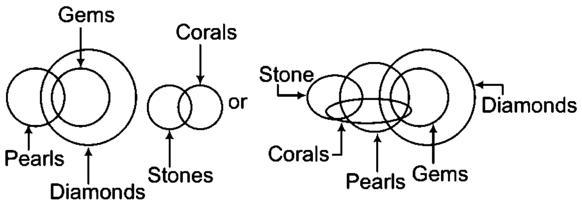
Conclusions I. Some centuries are years. (✗)
II. Some decades are years. (✓)
III. No century is a year. (✗)

46. (*b*)


Cricketers
Basketball players
Hockey players
Football players

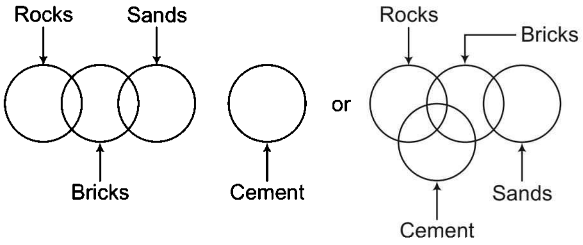
Conclusions I. Some hockey players are football players. (✓)
II. No basketball player is a cricketer. (✓)
III. Some hockey players are basketball players. (✗)
IV. Some football players are cricketers. (✓)

47. (*c*)


Gems
Pearls
Diamonds
Corals
Stones
or
Stone
Corals
Pearls
Gems
Diamonds

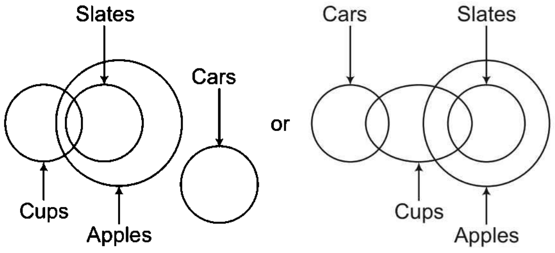
Conclusions I. Some stones are pearls. (✗)
Complementary pair (I-E)
II. Some corals are diamonds. (✗)
III. No stone is pearl. (✗)
Complementary pair (I-E)

48. (*e*)


Rocks
Sands
Bricks
Cement
or
Rocks
Bricks
Sands
Cement

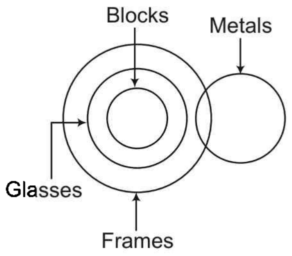
Conclusions I. Some rocks are cement. (✗)
II. Some rocks are sands. (✗)
III. Some sands are bricks. (✓)
IV. No brick is cement. (✗)

49. (*d*)


Slates
Cars
Cups
Apples
or
Cars
Slates
Cups
Apples

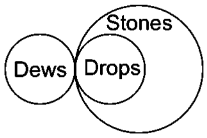
Conclusions I. Some cars are slates. (✗)
II. Some cups are cars. (✗)
Complementary pair (I-E)
III. Some apples are cups. (✓)
IV. No car is cup. (✗)
Complementary pair (I-E)

50. (*a*)


Blocks
Metals
Glasses
Frames

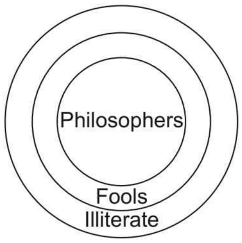
Conclusions I. All blocks are either metals or glasses. (✗)
II. Some blocks are metals. (✗)
III. Some frames are blocks. (✓)

51. (*e*)


Stones
Dews
Drops

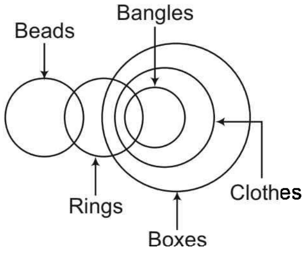
Conclusions I. Atleast some dews are stones. (✓)
II. Atleast some stones are drops. (✓)

52. (*b*)


Philosophers
Fools
Illiterate

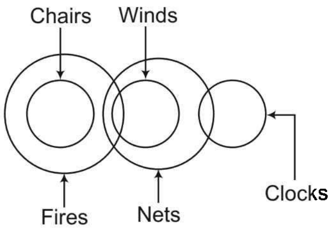
Conclusions I. All Philosophers are illiterate. (✓)
II. All illiterates are Philosopher. (✗)
III. All illiterates are fools. (✗)
IV. Some illiterates would be Philosopher. (✓)

53. (*e*)


Beads
Bangles
Clothes
Rings
Boxes

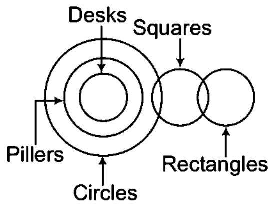
Conclusions I. Some boxes are bangles. (✓)
II. Some clothes are rings. (✓)
III. Some bangles are beads. (✗)

54. (*c*)


Chairs
Winds
Clocks
Fires
Nets

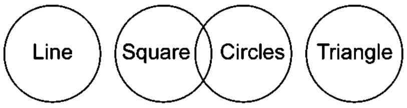
Conclusions I. Some clocks are winds. (✗)
II. Some nets are fires. (✓)
III. Some winds are chairs. (✗)

55. (*c*)


Desks
Squares
Pillers
Rectangles
Circles

Conclusions I. Some rectangles are pillars. (✗)
II. Some circles are desks. (✓)
III. Some squares are desks. (✗)

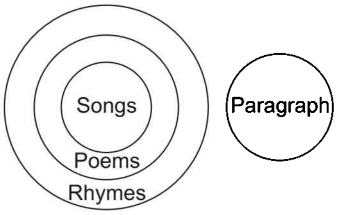
Solutions (Q. Nos. 56-57)


Line
Square
Circles
Triangle

56. (*a*) **Conclusions** I. All squares can never be triangles. (✓)
II. Some lines are circles. (✗)

57. (*e*) **Conclusions** I. No triangles is a square. (✓)
II. No line is a circle. (✓)

Solutions (Q. Nos. 58-59)


Songs
Poems
Rhymes
Paragraph

58. (*e*) **Conclusions** I. No song is a paragraph. (✓)
II. No poem is a paragraph. (✓)

59. (*b*) **Conclusions** I. All rhymes are poems. (✗)
II. All songs are rhymes. (✓)